THE LANCET.

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John B. Murphy, M.D.

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Address in Medicine

ON

MEDICINE FROM THE CHEMICAL STANDPOINT.

Delivered at the Eighty-second Annual Meeting of the British Medical Association

BY ARCHIBALD E. GARROD, D.M., M.A. OXON., F.R.C.P. LOND., F.R.S.,
PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

MR. PRESIDENT, LADIES, AND GENTLEMEN,—So rapidly is our field being extended that year by year it becomes more difficult to deliver an address in medicine which shall treat of the subject in any of its wider aspects. None the less I would express my sincere gratitude to the Council of the British Medical Association for the honour which it has done me in inviting me to essay the task.

Seeing that we are met together within the precincts of an ancient seat of learning which was the first of all British universities to establish a chair of medicine, it might be fitting that I should take as my subject some phases of the past history of our science and art. However, we see around us so many signs of a spirit of emulation and progress, and of a vitality which has been stimulated rather than inhibited by the lapse of centuries, that I have no fear lest, in selecting as my theme some of the most recently acquired aspects of medicine, I shall be in less complete accord with the *genius loci*.

THE FOUNDATIONS OF MEDICINE.

The curriculum laid down for our students bears witness to the complexity of medical science. No student is held competent to enter upon his clinical studies until he has acquired some grounding in chemistry, physics, and biology, and a more detailed knowledge of human anatomy and physiology. In a word, medicine rests upon a substructure of other sciences, and the entire system of medical education is based upon the fundamental truth that a knowledge of the normal must needs precede any profitable study of the abnormal.

It need hardly be pointed out that such a curriculum in no way reflects the path along which medicine, as we know it, has been evolved. Hippocrates, Galen, and their contemporaries enjoyed no such advantages as do our students of to-day. They initiated the study of clinical medicine at a time when the very foundations of chemistry and physics were as yet unlaid—when the anatomy of the human body was, to all intents and purposes, a sealed book, and when physiology, pathology, and pharmacology did not yet exist. At a later period, and with the passing of the Dark Ages, science began to awaken from her long sleep, and there came, with the revival of learning, a realisation of the need of a new medicine, freed from the trammels of tradition, and based upon observation and experiment. Physicians began to observe for themselves once more, and no longer relied almost wholly upon the teachings of the ancients. Step by step the study of those primary branches of science upon which rational medicine needs must rest was pursued, to a large extent by medical men who recognised, and strove to supply, the growing demands of the healing art. Thus it has come about that, immense as is the debt of medicine to the pure sciences, the reciprocal debt of those sciences to medicine is hardly, if at all, less.

The more ancient sciences were studied at the outset merely as stepping-stones to practical ends—ends which were, for the most part, far less worthy than those of medicine—were sometimes grotesque, and usually unattainable. Thus astronomy had its origin in astrology; the earliest chemists were alchemists who were intent upon the discovery of the philosopher's stone and the elixir of life; and physics is beholden, in no small degree, to the futile quest of perpetual motion. Then came a time when knowledge began to be pursued for its own sake, and the true scientific spirit was born. But progress was for a long time slow, and only now, when chemistry has advanced beyond all recognition, when every detail of structure of the human body has been revealed by anatomy, and when physiology and pathology find many who make them the study of their lives, are the foundations of the clinical edifice being securely laid.

So complex is modern medicine, and so diverse are its aspects, that we cannot hope to attain to any comprehensive notion thereof if we regard it from any single point of view. We need to adopt, on the one hand, the standpoint of the human organism engaged in its unceasing struggle to ward off the assaults of disease, and, on the other hand, that of the agents of disease which are as incessantly striving to gain a foothold. The clinical worker whose task it is to diagnose the nature and seat of the malady, and to intervene in the interests of the patient, has *his* special outlook; and the pathologist, who studies the havoc worked by disease, has *his*. Again, we may contemplate the human organism as a whole, or as a complex structure built up of diverse organs and tissues, each with its assigned functions, or once again, as a nation of cell units endowed with manifold activities. Lastly, we have to picture each individual cell as a congeries of chemical molecules which are being continually pieced together and broken down by the agency of intracellular enzymes. Thus physician and physicist, physiologist and pathologist, biologist, bacteriologist, and chemist, each looks out upon the field of medicine from his own standpoint, and to each it wears a different aspect. Only by the combination of the several mental pictures can a stereoscopic presentation be obtained.

THE PROGRESS OF CHEMICAL SCIENCE.

Many of the early chemists were practitioners of medicine, and from the days of that eccentric genius who assumed the name of Paracelsus, and of van Helmont, the father of physiological chemistry, down to the earlier years of the nineteenth century, the chemical outlook was that most widely adopted by medical men. But in those earlier days chemistry itself was in far too embryonic a stage to lend much aid to the elucidation of the problems of disease, and, as time went on, the chemical outlook was abandoned to a large extent in favour of that afforded by the rapidly advancing study of morbid anatomy. Throughout the greater part of the last century morbid anatomy and histology held the field unchallenged; and they were justly entitled to do so in view of the progress made in the macroscopic and microscopic study of diseased structures, upon which was reared the imposing edifice of cellular pathology.

If, of recent years, morbid anatomy has yielded the foremost place to other branches of pathology, this should not be interpreted as showing that the subject is exhausted, nor that its value is less than used to be supposed, but rather as evidence of the need to bring forward the less advanced branches to the same level. The advance guard is being strengthened by calling up the supports in order that the army of progress may present an even front. Yet, during the period when morbid anatomy and pathology were synonymous terms, the science of chemistry, both in its inorganic and organic branches, was making rapid strides, and when medical investigators turned back once more to pick up the chemical threads they found, in the chemistry of that later day, a mass of systematised knowledge ready prepared to aid them in their advance. This new science—for such it is—had its birth in the epoch-making discoveries of Priestley and Lavoisier.

Nor had that side of chemistry which bears most directly upon medicine been neglected. The syntheses of urea, by Wöhler in 1828, brought the products of life within the province of the pure chemist, and there had always been investigators who, with Liebig, studied the intake and output of living organisms, and who added to our knowledge of the chemistry of the urine, and of the problems presented by such maladies as diabetes and gout. Amongst these not a few countrymen of our own will always be remembered with honour. In any modern treatise on chemistry the section which deals with the compounds of carbon far exceeds in bulk that which is devoted to the inorganic branch. Carbon compounds of ever greater complexity have been built up, step by step, from their elements, and even the synthesis of proteins is being brought within our reach, thanks to the labours of Emil Fischer and of a body of workers who have derived their inspiration from him.

BIOCHEMISTRY.

Thus have been gained possibilities of fresh and conspicuous advances in the field of physiology. A new era of pathology has dawned. Side by side with the new science of bacteriology, which has already, in but a few years, transformed our conceptions of disease, there is growing up a vigorous science of chemical pathology, and, for the moment, morbid anatomy is resting upon its laurels.

The provinces of bacteriology and pathological chemistry are very different. Whereas the former investigates the actual agents of disease, the latter reveals the disturbances which result from their invasion. If I may venture to employ again an analogy already used elsewhere, the bacteriologist deals with a stone which, falling into the pool, ruffles its surface, whereas the chemist directs his attention to the ripples which spread outwards, in expanding circles, from the point of impact of the stone. Yet bacteriology is ever setting new tasks for the chemist, who just as he is coming to grips with the older problems of the structure of proteins, carbohydrates and fats, and of the chemical changes which constitute the life of the tissues, is confronted with a demand for information regarding substances and processes which are still beyond his reach—intangible entities revealed as yet by single properties. As he surmounts the foothills there open upon his view loftier heights beyond.

Biochemistry presents itself under two aspects: a static, which is concerned with the study of chemical structure, and a dynamic, which deals with the chemical changes of which the living tissues are the seats. Thus we may wander among the streets of some deserted city of the past, may study the fabric of its buildings—the stones, bricks, and mortar employed in their construction, and in this way may gain some knowledge of the uses for which the several buildings were designed. Just so the anatomist investigates the structure of the organs of the dead body, and the chemist, by his analyses, gains a minute insight into the molecular groupings of the materials of which its tissues are composed. Even in the dead city all is not still and at rest. The ancient walls are subject to weathering and decay, and gradually crumble under the influence of air and rain. Yet other changes are wrought by lowly forms of animal and vegetable life, which undermine the ruins and, in the end, bring about their downfall. So, too, in the dead body, destructive agencies are constantly at work until the dust returns to its dust again.

Once more we may tread the street of a city of to-day, may watch the movements of the crowds as they pass, the gathering and dispersal of groups of people. We may study the arrangements for the disposal of waste products, the ways in which food supplies are brought in, dealt with, and distributed. Or we may investigate the police arrangements, the sanitary services, and the various devices resorted to by the community for its protection. The study of the human organism on such lines is the province of physiology, and it is to designate the sum total of the manifold chemical processes in action within the living organism, and which constitute its life, that the term "metabolism" is employed.

But the chemical physiologist is far from sharing the opportunities afforded to our wayfarer. He is hardly permitted to set foot within the walls of the living city, and on that account his investigations are carried on under serious disadvantage. Determination of the balance of intake and output affords clear indication of the grosser chemical interchanges in the body, but the study of the intermediate stages is a far more difficult task, and only now are we beginning to gain an insight into the details of metabolism. Such knowledge of these details as we have acquired is largely based upon circumstantial rather than upon direct evidence. But here, as in so many other fields, pathology lends valuable aid to physiology, and Nature's experiments and her mistakes afford, to him who is able to read them aright, insight into the methods of her orderly working.

INVESTIGATIONS INTO THE PROTEINS AND OTHER COMPOUNDS.

Among the building materials employed in the construction of living organisms the proteins hold a place apart. They are the actual vehicles of life, and upon their properties the very possibility of life depends. Important, and indeed essential, as are the parts played by compounds of other kinds, carbohydrates, fats, water, and inorganic salts, their functions within the organism are secondary. They are employed in the service of the proteins of the tissues. Fats and carbohydrates are in part burned to supply the daily demand for kinetic energy, the energy expended in muscular action, in glandular activities, and in the maintenance of the temperature of the body, and are in part stored for future use. Even much of the protein of the food is, as we now believe, stripped of its nitrogen and utilized as fuel, whereas another portion is employed in the reconstruction of the tissues. No less

essential to the organism are the inorganic salts, in the regulation of the osmotic phenomena, in the maintenance of the alkalinity of the body fluids and the acidity of the gastric juice, in conferring the required rigidity upon the skeleton, and in a hundred other ways.

The more intimate knowledge of the structure of protein molecules which we now possess is an acquisition of the still young twentieth century. The huge molecules have been teased out—to borrow a term from histology—and as a result the conception of an unwieldy group of atoms has been replaced by that of an orderly structure composed of comparatively simple building stones of a neatly constructed block of masonry rather than an amorphous mass of concrete. These building stones are the now familiar protein fractions. Some of them have long been known as rare ingredients of the excreta—such, for instance, as tyrosin, leucin, and cystin—but whence they came and how they were formed in the body was, until recently, unknown.

Widely as the protein fractions differ in their structure they have this in common—that they are amino- or diamino-acids. Seeing that they share the properties of acids and bases, they are capable of combining with each other to form the complicated chains or networks which constitute the protein molecules; and since they admit of combination into many different groupings, there is a possibility of almost infinite varieties of protein structure. The number of distinct fractions is by no means large, but every change of grouping, however slight, brings into existence a new protein. The poet Lucretius, whose marvellous insight led him as by instinct to views of the constitution of matter which science has only reached after centuries of observation and experiment, was fully alive to these capabilities of atomic rearrangement. Writing before the commencement of the Christian era he tells us how just as in his verses many different words are formed by the rearrangement of but a small number of letters, with the result that word from word and verse from verse differs both in sense and sound, so also by the various groupings of a few essentials are built up all the objects of animate and inanimate nature: "Tantum elementa queunt mutato ordine solo."

Abderhalden has estimated that the possible combinations of the 20 known protein fractions, in which each individual fraction is represented once and only once, need for their expression a number composed of no less than 13 digits. When we consider that from some proteins one or more of the animo-acid fractions are missing, and that in almost all of them the representation of the several fractions differs widely from that assumed in the calculation, we can realise that the number of possible varieties of grouping can only be expressed by figures which surpass those with which the astronomer is wont to deal. Nor is evidence lacking that the proteins of living organisms do actually differ among themselves in ways not dreamed of until quite recent times.

THE SPECIFICITY OF CHEMICAL STRUCTURE.

The dictum, so painfully familiar, that "all flesh is not the same flesh, but there is one kind of flesh of men, another flesh of beasts, another of fishes, and another of birds," has acquired a new reality. We are learning, upon evidence which admits of no question, that the very proteins which perform identical functions in different animals are not themselves identical, but differ from genus to genus, from species to species, and differ the more widely the further the several species are separated from each other in the evolutionary scheme.

Much of this evidence is derived from delicate and subtle reactions, such as the precipitin test, and from the study of the response of the organism to the introduction of foreign proteins, the phenomena of anaphylaxis, and the formation of protective enzymes; but some facts which have been demonstrated to generations of students, such as the differences in the crystalline forms of the hæmoglobins of animals of different species, bear witness to specificity of chemical structure. Nor can we suppose that the differentiation stops short at the boundaries of species; chemical individuality follows, as a necessary corollary, to chemical specificity.

The effect upon physiological thought of this conception of chemical specificity has already been far-reaching. We no longer think of the proteins of food as utilised, after comparatively slight change, and in such complex forms as albumose and peptone. The differences between the food proteins and those of the animal fed necessitate the assumption that their disintegration by the digestive juices is far more thorough than used to be supposed, and that reconstruction of the proteins in the organism fed starts from the primary amino-acid fractions. That the primary fractions are able to be so utilised has been demonstrated by experiment.

During the earliest period of life, when the digestive functions are as yet but imperfectly performed, nature supplies for the infant organism a natural diet exactly adapted to its requirements, and containing, in due proportions, all the materials necessary for its nutrition. Mother's milk has the additional advantage that its components have the specific stamp, an advantage which is, in all probability, connected with the phenomenon known as anaphylaxis. In later life any such exact adaptation is clearly unnecessary, and vegetivorous animals, whose earliest food was mother's milk, thrive upon a diet of which the protein constituents are not even of animal kinds.

Even this does not exhaust the complexity of protein structure, for each tissue-protein bears not only the impress of the specific stamp, but also of a second stamp derived from the organ of which it forms part. The recent work of Abderhalden and the study of cytolysins afford evidence that the proteins of the liver, spleen, pancreas, or any other organ have their special peculiarities. It seems probable that the liver proteins of the sheep and dog, although they exhibit specific differences, agree in containing in their molecules some particular group of atoms the possession of which confers the hepatic impress. Thus an independent system of cross classification is indicated.

It has long been known that sulphur is a constituent of proteins, and that in some of them phosphorus is also contained. We have now learnt that the small quantity of sulphur met with is contained in one particularly amino-acid fraction—namely, cystin—and that an unusually large proportion of sulphur indicates a large cystin content. The phosphorus, on the other hand, is a constituent of the nucleo-proteins which, as essential constituents of the cell nuclei, may lay claim to an importance second to that of no members of the protein group. In them also is included the purin grouping, the parent complex of most of the uric acid of the urine. As another example of a protein

to which a special atomic group is attached hæmoglobin calls for mention, seeing that, in virtue of the iron-containing hæmatin which it includes, it is able to fulfil the all-important function of carrier of oxygen to the tissues.

The highly complicated protein molecules naturally afford the greatest scope for specific differentiation, but differences of a like type are exhibited by the fats of different animals, and are manifested not only in the results of chemical analysis, but also in such naked-eye appearances as depend upon a lower or higher melting point. The far simpler carbohydrates admit of but slight variations, and the inorganic salts of *none at all*. However, in some species of animals elements which but seldom enter into the composition of organic compounds are embodied in the tissues, as, for example, copper, which is a constituent of the blood pigments of some lowly animal forms, and of the red pigment turacin which colours the feathers of certain birds.

THE METABOLIC ACTIVITIES OF THE LIVING ORGANISM.

The flight of time forbids me to dwell at greater length upon the diversity of the chemical structure of the animal organism, but enough has been said to show how essential is an acquaintance with the leading facts of the statical side of biochemistry, if we are to gain any adequate conception of metabolism, of that bewildering whirl of chemical activities of which the tissues are the seat. In every organ and every cell in the body chemical changes are constantly in progress. Processes of synthesis and of analysis, of oxidation and reduction, of anabolism and katabolism, proceed side by side in the same tissue, and even in the same cell, smoothly and without clashing or mutual disturbance.

The foodstuffs which enter the alimentary canal are dealt with by the digestive juices, are broken down into their simple fractions, and are so prepared for absorption. The products thus yielded are employed in part for the maintenance of the optimum body temperature and for the supply of kinetic energy of muscular movements, both voluntary and involuntary. Another portion is stored for future use, either in the fat depôts, storehouses of potential energy which serve the additional purpose of providing a warm covering for the deeper structures, or as glycogen in the liver and muscles. From the glycogen reservoirs glucose is distributed in a continuous, regulated supply to meet the requirements of the tissues. Some of the protein fractions are built up anew into specific proteins to replace the loss which results from the wear and tear of metabolism, and may be utilised in other ways. The remainder, and probably the greater part, are stripped of their amino-groups and used as fuel.

What has been learnt of the intermediate steps of metabolism has already served to modify profoundly our conceptions of the metabolic processes. We no longer think of the foodstuffs as so much gross fuel cast into a furnace, but of each kind of foodstuff, and indeed of each individual protein fraction, as following its own special metabolic path. Moreover, there are paths for fats and paths for carbohydrates, and it is evident that even dextrose and lævulose are dealt with in different manners, for a patient whose power of burning dextrose is grossly impaired may deal with lævulose with far better success. In the same way the power of katabolising a single protein fraction may be lacking in an individual who is able to dispose of the other protein fractions in a normal manner.

It is believed that these changes are wrought by specialised enzymes, many, if not all, of which are capable of reversed action. We may picture to ourselves the individual protein fraction as handed on from enzyme to enzyme, each responsible for some particular step in the series of changes, until the series is completed and the specific protein has been built up, or the final excretory product has been reached. Thus are produced numbers of intermediate products which are subjected to further changes as soon as they come into existence, and which call to mind a moving staircase rather than a flight of steps. Most of these intermediate products are never met with in an examination of the excreta, or only when the further transformations which they naturally undergo are in some way arrested.

Regarded from the chemical standpoint, each cell in the body is an individual member of a community, although, in all organisms but the simplest, the various cells are differentiated for the performance of special functions, and to that extent have sacrificed their individuality. Each product of glandular activity bears witness to specialised metabolic processes in the cells by which it is produced. So far is the differentiation carried out that, as in a highly civilised community, the destruction of a single part may suffice to bring the life of the community to a standstill. We may ponder over this conception of the elaborate metabolic activities carried on in the living organism until the brain reels, and the imagination is no longer able to cope with their infinite variety.

It is only to be expected that, in the course of evolution, a state will have been brought about in which the end products of metabolism will be harmless to the organism in which they are formed; but so delicately are the relations of tissue change adapted to the requirements of the organism that any deviation from health which disturbs the chemical processes, however slight the disturbance may be, leads to the formation of products which are less well adapted and tend to do harm. Some are so little noxious that their deleterious action is only manifested after the lapse of many years, whereas others, such as the substances of the acetone group, lose no time in working mischief. This harmonious working, side by side, of antagonistic processes will continue for many years, unless it be disturbed by influences from without. But such are the conditions of life upon this planet that the vital processes seldom have the chance of working themselves out to their natural termination in death from sheer old age—their natural ending, because the human machine is not perfect, and gradually deteriorates from the cumulative effects of infinitesimal errors of experiment, until it is brought to a standstill at last.

THE REGULATION OF METABOLISM.

Obviously, it is only by a rigid system of control that the orderly working of the intricate metabolic changes can be maintained, and the working of regulating mechanisms in the animal body is made manifest in a variety of different ways. Only by strict regulation can the breakdown of tissues be kept within bounds; can the uniform composition of the blood be maintained, and the optimum temperature of the body be insured—to quote only a few examples out of many. Yet the regulator mechanisms are not devoid of flexibility, as witness the phenomena of fever, the growth of the body

in early life, the developments which constitute puberty, the coming into play and passing into abeyance of specialised functions, and the adaptation of the organism to changes of environment.

In recent years we have gained some insight into the mechanisms by which regulation is effected, and of the importance in this connexion of the internal secretions of glands, ductless and others. We see how disease of a gland which yields such a secretion may disturb the metabolic balance in the direction of excess or defect, and in so doing may influence growth and development. Such studies are profoundly modifying our conceptions of such anomalies as obesity and infantilism, and we are learning that the glands which may be classed together as members of a hormonopoietic system constitute a group of balanced regulators of metabolism, although it may be conceded that, in this connexion, theory tends for the moment to outstrip established fact. However, the internal secretions are implements rather than originators of control. The hormones are themselves but chemical products of certain specialised cells, and the activities of the glands which produce them are themselves under the control of the vegetative nervous system, which transmits to them impulses in response to the chemical demands of the tissues. Thus, in a sense, the regulation of metabolism is automatic.

INBORN ERRORS OF METABOLISM.

The chemical processes in the tissue are not moulded upon uniform lines throughout the animal kingdom, any more than is chemical structure. Evidence of this is afforded by the formation of special protective secretions, of specific bile acids, and of peculiar excretory products, such as the kynurenic acid found in the urine of members of the canine tribe. Moreover, just as certain individuals of a species exhibit conspicuous deviations from the structure of the species, malformations by arrest, or of other kinds, so also individuals are met with who exhibit some striking metabolic anomaly, a chemical freak. These inborn errors of metabolism are individually as rare as structural malformations and much more liable to be overlooked. Their scientific value far exceeds their clinical importance, for they constitute true natural experiments. Those which are known advertise themselves in conspicuous ways and appear to have their bases in failures to carry out some special catabolic process rather than in a deflexion of metabolism into unusual paths. Thus, in cystinuria cystin and sometimes other protein fractions also escape their normal fate and appear unchanged or only slightly changed in the urine. In alkaptonuria, on the other hand, there is a failure to complete the breakdown of the aromatic protein fractions, and the homogentisic acid which is excreted is thought, with good reason, to be an intermediate product of normal metabolism. From the study of alkaptonuria we have learnt nearly all such details as we know of the fate of tyrosin and phenyl-alanin in the body, and have gained an insight into the differential treatment of the protein fractions in general and into the intermediate steps of their catabolism.

I set out to draw a sketch of the normal metabolic processes; the outcome of the attempt is but a crude diagram. Time will not permit of any attempt to fill in details, nor to put before you the evidence upon which the outlines of my description are grounded. I am content if I have succeeded in conveying some notion of the ceaseless chemical turmoil in the living human organism.

PROTECTIVE MECHANISMS AGAINST TOXIC AGENTS.

When into this field of intricate but orderly metabolic activities there intrude the agents of disease, a new set of phenomena is brought into action. The entire community bestirs itself to beat off the intruders, and there are called into play protective mechanisms of immense variety and displays of infinite resource; just as a national community, whose members are at ordinary times engaged in the calmer pursuits of commerce and agriculture, may, on the occurrence of a hostile invasion, assume the attitude of a nation in arms. Such a transformation involves profound disturbance of the ordinary life of the people, and so, too, the invasion of morbific agents produces derangements of metabolism which are the more profound and far-reaching the greater the danger to be faced. We must suppose that in many, and indeed in most, instances the forces of defence gain the upper hand, and the invaders are beaten off. When the first line of defence is overcome disease results, but even then the defences of the second line usually suffice to counter the attack and the patient recovers.

The mechanisms of defence are of various kinds. Some are comparatively simple chemical reactions, as when free acids are neutralised by ammonia diverted from its ordinary path to the formation of urea, or when aromatic poisons are combined up with sulphates and are excreted in harmless forms. But aromatic poisons are also combined with products of protein or carbohydrate metabolism, with the protein fraction glycin to form the harmless hippuric acid and its allies, or with glycuronic acid to form compound glycuronates. Other mechanisms are far less simple, and the very nature of the protective agents is beyond the ken of the chemist. These are the agents known as antitoxins, agglutinins, precipitins, opsonins, and the like. Quite recently the researches of Abderhalden have opened up a new field of such studies by revealing the production of protective ferments capable of destroying protein substances foreign to the organism. It would seem, indeed, that each constituent cell of the body brings into play its enzyme-forming powers to meet an emergency.

It is a question of much interest whether or no the various protective mechanisms have been evolved to meet the assaults of those toxic agencies to which the organism is specially exposed, or whether an entirely new mechanism can be devised at any moment to meet an unforeseen emergency. Evidence may be adduced in support of either hypothesis. The laws of chemistry are so immutable that, given certain conditions, definite reactions may be expected to occur. We are able to predict the formation of compounds which may never have existed previously and to foretell their properties with some degree of accuracy. So we might expect that a given poison launched into a medium in which a number of metabolic products are present will combine with one or other of these. But in the human organism the conditions are far less simple than in the laboratory, and we are driven to suppose that enzyme action is concerned in the production of such compounds as hippuric acid or a compound glycuronate; and we may well imagine that even when the requisite materials are forthcoming combination may fail for lack of the required enzyme. As Hopkins has pointed

out, it is unlikely that until Baumann administered brombenzine to a dog that compound had ever found its way into the canine organism. Yet any dog to which that substance is given excretes it in combination with the metabolic product cystein in the form of a so-called mercapturic acid. The mechanism is ready to hand, although we can hardly suppose that special provision is made for the contingency. The simpler mechanism for the neutralisation of acids by ammonia supplies an argument in support of the alternative theory, for this is not developed in herbivorous animals, which, from the nature of their diet, are far less exposed than the carnivora to poisoning by acids.

METABOLIC DISTURBANCES DUE TO DISEASE OF ORGANS.

There are many other ways in which derangements of metabolism are brought about by disease apart from the calling into play of protective mechanisms. When an important organ becomes the seat of structural changes its functions become disturbed and their normal orderly working is put out of gear, either permanently or only for a time. Thus if the lungs are rendered inefficient the respiratory interchange is interfered with, and deficient supply of oxygen to the tissues and imperfect removal of carbon dioxide bring in their train obvious and well-recognised results. Diseases of the heart muscle produce similar effects by impairing the circulation in the lungs and elsewhere. When the liver is attacked, either primarily or as the result of circulatory disturbances, the assault falls upon an organ which is the seat of more multifarious chemical activities than any other in the body. When the bile-ducts are blocked the absence of bile from the intestine grossly impairs the absorption of fats, and the constituents of the retained bile fluid find their way into the circulation and are deposited in the tissues. When the parenchyma suffers many metabolic processes which are carried out in the liver are disturbed, yet the effects of these disturbances are less conspicuous than might be expected.

The effects of disease of the pancreas are less obvious, but the absence of pancreatic juice from the intestine causes profound derangement of the digestion of proteins and fats, and the effects of the failure of its internal secretion upon carbohydrate metabolism are familiar to all. Diseases of the alimentary tract cause impairment of the intake of nutritive materials, and changes wrought by the bacteria which inhabit the intestines upon the intestinal contents may result in the formation of poisonous products which undergo absorption, to the great detriment of the organism. When the kidneys are the seats of disease, the elimination of waste products—the hygiene of the tissues—is impaired, to a greater or less extent, and these products accumulate in the organism where they induce a chain of morbid effects which culminate in the stormy symptoms of uræmia.

It is because disease of glands of internal secretion produces such profound disturbance in the chemical field that we have learnt to recognise the important part which they play as regulators of metabolism. We see how functional inactivity of the thyroid gland renders sluggish the metabolic processes as a whole, whereas its over-activity—if that be the correct interpretation of the phenomena of exophthalmic goitre—causes the metabolic fires to burn too brightly. We see also how a too active pituitary gland stimulates the organism to abnormal growth, whereas loss of its functional activity brings in its train obesity and recessive infantilism. Phenomena of a like order result from diseases of the adrenal and pineal glands, and we are only beginning to learn how great a part variations in the secretion of adrenalin by the chromaffin tissues may play in connexion with a number of maladies in which the adrenals themselves are not primarily implicated. Indeed, it may be said that all diseases, whether they affect the organism as a whole or whether their brunt be borne by single organs, bring about greater or less disturbance of metabolism. The field of chemical pathology is practically coextensive with the field of medicine.

In the case of many maladies, even of the more acute and graver ones, the chemical disturbances which they bring in their train are far less conspicuous than the structural changes. In others, again, the metabolic disorders occupy the forefront of the clinical picture, as is the case in those maladies which we are accustomed to group together under the collective name of "diabetes." In not a few cases of diabetes grave, and even fatal, metabolic disturbances are attended by no structural lesions which we can detect. It is natural that the attention of chemical workers in medicine has always been directed to such "diseases of metabolism," and the problems which they present are still very far from solution.

DEFICIENCY DISEASES.

Hitherto we have been considering what may be described as *positive* diseases, which result from attacks upon the organism by morbific agents introduced from without; but there remains to be considered a group of maladies which may be classed as *negative*, seeing that they have their origin in the withholding of some portion of the supplies which the organism derives from external sources, and upon which its wellbeing depends. The extreme example of such a disease is starvation—a condition in which the body, being deprived of its food supplies, lives for a time upon its own fats and carbohydrates, and ultimately upon the proteins of its tissues. Minor degrees of the same condition are induced by restriction of the intake below an adequate calorie value, of proteins below the amount compatible with maintenance of nitrogen balance or by complete deprivation of carbohydrate foods.

The cutting off of carbohydrates, or failure to assimilate them, is promptly responded to by disturbance of fat and protein metabolism, with the result that the substances of the acetone group, aceto-acetic and β-oxybutyric acids are formed and excreted in large quantities. This condition of acetonæmia, which plays so important a part in diabetes, and is met with in children suffering from many diseases, affords the most conspicuous example known of the formation of actively harmful products as a result of the throwing out of gear of the normal metabolic processes. There is much that is still obscure in the pathology of acetonæmia, and it is probable that future researches will profoundly modify the current views in acidosis. This much is certain—that many facts of clinical observation can with difficulty be reconciled with the prevalent theories.

Of equal interest are certain maladies which result from dietetic shortcomings of far less obvious kinds—defects which cannot be estimated in terms of calorie value or nitrogen balance. It is becoming

evident that a normal dietary must contain constituents of which we have hitherto taken no reckoning, just as the air which we breathe contains gases of the existence of which we had no inkling until recent years. The new study of vitamines and of the effects of a diet consisting of pure proteins, fats, and carbohydrates upon the growth of young animals is beginning to throw light upon the nature of such factors—exogenous hormones, if I may so style them. That scurvy results from errors of diet has long been known, but the dietetic factor in the causation of beri-beri is of far more recent recognition.

It is not surprising that such diseases of defect, when once recognised as such, are far more readily amenable to treatment than any others. The missing factor supplies the specific remedy. Starvation is readily cured by food and scurvy by a diet of fresh meat and vegetables, just as myxœdema yields to treatment by thyroid extract, but in all such cases continuous administration of the missing factor is essential for the continuance of well-being.

Influence of Chemical Knowledge on the Practice of Medicine.

Thus we see how delicate a matter is the maintenance of the integrity of the metabolic processes in the human body, and how slight disturbing influences may lead to their derangement. Any failure of adaptation to environment, any attack from without, any failure of supply of foodstuffs, water, or oxygen, produces effects which are not merely local, but which awaken chemical echoes throughout the entire organism.

To us who are engaged in the practice of medicine, the knowledge which has been gained of the chemical structure of the human body, and of the dynamic chemistry of its tissues, has no mere academic interest. It cannot fail to influence profoundly our conceptions of disease, and no less profoundly our therapeutic measures. At the outset the feeling induced by such studies is one of awe. We are impressed by the infinite complexity of the mechanism with which it is our business to interfere, as would be a man ignorant of horology who undertook to repair a watch. No less profound is the feeling of admiration aroused by the contemplation of Nature's methods for the combating of disease. We appreciate the force of Paracelsus's rebuke to his professional brethren: "Nature is the physician, not thou. Thou must learn of her, not of thyself." We realise how inefficient are our therapeutic efforts as compared with the powers of protection with which our patients are themselves endowed. Yet the physician has the satisfaction of knowing that he can often render valuable aid, and that by his care many a life is saved. In some maladies, due to animal parasites, he can even attain to the final aim of therapeutics—namely, to destroy the agents of disease without damage to the tissues of their host. But Nature has means by which to parry each stroke in detail, can produce antidotes to specific toxins or substances lethal to specific bacteria, and can sometimes protect the patient from a repetition of a particular infection for the remainder of his life.

Chemistry in Diagnosis.

It is in the field of diagnosis that the practical utility of chemical knowledge is most obvious. The derangements of metabolism caused by disease are reflected in the excreta. In these, and especially in the urine, are found abnormal ingredients indicative of the nature of the disturbance at work. Some are substances which are present in normal urine, but in traces so small as to escape detection by the simpler methods of analysis; others are intermediate products of metabolism which have escaped destruction, and are excreted as such or in slightly altered forms, or in combination with toxic substances, which they render innocuous. In the urine, too, we find evidences of undue waste of tissues, or of failure to eliminate waste products. Methods of ever greater delicacy and precision are being applied to urinary analysis. Quantitative estimations supplement qualitative findings, and many of the modern methods can only be carried out in a well-equipped laboratory.

By examination of the urine we learn much concerning the condition of the kidneys and urinary tract, and by the application of functional tests we may get to know something of the incidence of disease upon different parts of the renal apparatus. Indications are afforded of the activities of intestinal bacteria and of the absorption of toxic substances from the alimentary canal. We can trace the development of acetonæmia in the maladies in which it occurs, and can obtain evidence of disease of the liver, pancreas, and other glands, and even of the bone marrow, in certain cases. Analysis of the gastric contents is giving us a new insight into diseases of the stomach, and the chemical examination of the fæces affords indications of hardly less diagnostic value, amongst others, of the presence of occult blood, and of derangements of the splitting and absorption of fats.

But perhaps the greatest recent advance in diagnosis by chemical means is the perfecting of methods which enable accurate and reliable estimations to be carried out, of such substances as glucose and uric acid, in small quantities of blood drawn from a vein, and even in a few drops of blood from a prick in the finger. Now that it has become possible to estimate the glucose content of the blood from day to day a new chapter in the study of diabetes is being opened. Again, the diagnostic methods of Abderhalden, which reveal the workings of protective ferments, afford means of diagnosis of a subtlety hitherto not dreamed of, and give promise of widely extended utility in the near future. However, these methods are complicated in technique, and reliable results can only be got by those who have had experience of their working.

Although there are few diseases in which, as in diabetes, chemical findings supply the diagnosis, shape the prognosis, and guide our treatment from day to day, it may be asserted with confidence that there is no branch of medical practice in which a knowledge of chemistry and of its methods is not of service to the practitioner of medicine.

Dietetics.

To turn to the field of therapeutics, there is no branch of treatment in which chemistry should help us more than in dietetics, but there is none in which we rely less upon the guidance of science, and in which the influence of tradition is so powerful. In so far as tradition embodies the accumulated experience of mankind, and of generations of sufferers from particular maladies, it is entitled to our fullest respect, and is sometimes our safest guide. But too often it rests upon the dicta of some teacher of the past, which have been repeated so frequently that they assume an authority to which they have no real claim. I am far from maintaining that our dietetic prescriptions must always have a scientific

basis, for our knowledge does not suffice to render this possible. Indeed, in matters of treatment there is danger in setting up too rigid a standard. A prescription which aims at the attaining of some particular object, although based upon scientific reasoning, may fail because we are not able to take into account all the conditions of the experiment. Not a few therapeutic measures have been introduced in deference to scientific reasoning which has since been shown to be unsound, and some of these, such is the irony of things, have nevertheless proved of real value.

There are scientific grounds for the belief that mankind habitually takes more protein food than is required for the due nutrition of the tissues, and undoubtedly the amount taken habitually exceeds that required for the maintenance of nitrogen balance. When, however, it is realised that the lower animals and savage races have adopted a standard of diet quite apart from medical advice, and presumably in accord with their needs, it seems more probable that our reasoning fails to take into account some unknown factors than that the instinct of whole races is at fault. But when we find bodies of men living under conditions which are in no sense natural, men leading sedentary city lives, but who habitually consume quantities of protein food suited to the strenuous existence of members of nomad races who seek their meat from day to day, we are certainly called upon to interfere, and can do so with confidence in the strength derived from the teachings of experience and the knowledge which physiology supplies.

As regards details of dietary, I would venture to assert that two-thirds of the restrictions imposed upon sufferers from particular maladies find no real justification in the teachings of science or of experience. How contradictory are the directions given by different advisers to gouty patients as to details of dietary, and how few of them can be justified by argument when called into question!

Certain general principles are clearly defined. We should aim at a diet of adequate calorie value, with due representation of the main classes of foodstuffs. The food should be so prepared as to be easily assimilable, and with due regard to the condition of the patient's alimentary canal. Some at least of it should be in a fresh state, and special restrictions are often desirable in view of defects of excretion, to rest damaged mechanisms, or to limit accumulation in the blood of metabolic products which fail to be dealt with in the normal ways. Yet it should be realised that, in prescribing a restricted diet, we incur serious responsibility. A diet from which one of the chief food factors is missing can hardly be maintained with impunity over long periods. Thus, although there can be no doubt that restriction of carbohydrates is of great value in the treatment of diabetes, a restricted dietary, if imposed by rule of thumb, and unless carefully watched, may do far more harm than good. In any case of diabetes a careful study of the response of the patient to carbohydrate restriction is desirable; a strict diet should only be reached by degrees, and throughout the course of the case the medical attendant needs to keep his hand on the tiller, ready to turn now in the direction of increased strictness, now to relax.

THERAPEUTICS, EMPIRIC AND SCIENTIFIC.

So, too, as regards treatment by drugs. Throughout the centuries drugs have been employed in the treatment of disease, and we almost forget that the control of disease by such means was a discovery and not part of instinctive knowledge. Remedies introduced on empirical grounds, or in deference to superstition or fantastic hypothesis, have nevertheless proved valuable weapons in the hands of many generations of medical men. In default of knowledge of anatomy and physiology therapeutics could not be other than empirical; but step by step, as we learn more of the ways in which drugs act, and of the morbid processes which we seek to influence by their means, a scientific system of therapeutics is being built up. We are learning of Nature, as Paracelsus bade us do. When we administer a serum or a vaccine, or such a drug as thyroid extract, we are copying Nature's methods and employing her own weapons; and even when the results do not come up to our hopes, we have the satisfaction of knowing that we are working upon sound lines, and may expect that, as technique improves, many difficulties will disappear.

When, on the other hand, the drugs which we employ are toxic substances, foreign to the organism, we need to realise that in giving them we often produce not only the effect aimed at, but by-effects which we cannot fully estimate. Pharmacology is teaching us how such drugs act, the limitations of their utility, the nature of their active principles, and how they may best be employed. In this way the discoveries of empirical therapeutics are being placed upon a scientific footing, and the blunderbuss prescription is giving place to the employment of single drugs of known efficiency.

Not only are the weapons improved but the progress of knowledge is making our aim more sure. We have learnt that, although it often is necessary to treat special symptoms, all morbid symptoms do not call for treatment, since many of them are manifestations of protective mechanisms; and even pain leads to the saving of many lives. But in guarding against a particular danger Nature sometimes imperils the organism as a whole. Thus increased blood pressure is doubtless advantageous to many who possess it, but when it reaches such a degree as to endanger the integrity of the arteries, or to cause symptoms distressing to the patient, we feel justified in attempting to lower it.

CONCLUDING REMARKS.

Nor must mention be omitted of the triumphs of preventive medicine, which bear eloquent witness to what science can accomplish in the medical field: triumphs exemplified by the guarding of communities from epidemic diseases, and the ridding of huge tracts in tropical lands of insect-borne maladies. Modern hygiene is a vast protective mechanism which aims at doing for the community what Nature does for the individual.

It is clear that we shall err greatly if, to quote the words of Kipling, "We are afflicted by what we can prove, we are distracted by what we know"; and if we allow our sense of the boundless complexity of the human organism to engender undue timidity in interference. That in proportion as we know more we can better diagnose disease, and can the more prudently and efficiently help our patients, daily experience teaches us. The immense progress of surgery in recent years, which has resulted from the strictly scientific work of Pasteur and Lister, impresses profession and laity alike, but the advances of medicine can challenge comparison even with those of surgery. Modern diagnostic methods enable us to recognise diseases of which our fathers never dreamed, and to detect the more familiar maladies in those early stages in which

they are most amenable to control. So long as they are used in conjunction with the older clinical methods, and not merely as short cuts to diagnosis, they prove unqualified boons. Nor can it be questioned that the range of efficient treatment is being extended widely.

But let us not forget how much we owe to the work done by our fathers with the less efficient methods at their disposal. We begin where they left off; the harvest which we are reaping they sowed; thanks to their advances we are able to advance yet further. If they knew less than we do, they had one great advantage over us, in that they had more time for thought.

That the progress of medicine has been more rapid in recent years than ever before is due to the cumulative advance of science as a whole. Modern physics and chemistry, and the borderland science of physical chemistry, have rendered possible modern physiology and pathology, and upon the foundations thus provided is being raised the stately edifice of a modern medicine, in which the scientific spirit shall have freer play than heretofore. Just as the spirit which animated those who worked and those who taught in the humbler buildings of the ancient Marischal College finds in these noble halls more ample opportunity and wider scope.

Address in Surgery

ON

THE SURGEON OF THE FUTURE.

Delivered at the Eighty-second Annual Meeting of the British Medical Association

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MR. PRESIDENT, LADIES, AND GENTLEMEN,—The perusal of addresses in surgery delivered at annual meetings of the Association during the last ten years leaves an impression on the mind that some of the surgeons who delivered them resembled proud conquerors on a battlefield, vain of their victories, brandishing their swords, and sighing for more foes to vanquish. Accounts of battles contain sickening lists of the killed and wounded and longer lists of those who die from infectious diseases in camps; records of surgical procedures always contain a mortality bill even for the most trifling operation.

The art of surgery is probably as ancient as the art of war, and is practised by warlike savages who have never been influenced by civilisation. The antagonistic callings of the soldier and the surgeon have been markedly modified by the progress of science. It is believed by many that the ingenuity exercised in the invention of methods for destroying life will make war impossible, and the discovery of the causes of diseases and the perfection of preventive medicine will render physicians and surgeons unnecessary. The belief in each instance is futile. Soldiers and surgeons will be required as long as civilisation endures; but their methods have undergone great changes and greater are impending. Gunpowder revolutionised warfare; the discovery of anæsthetics and the invention of the microscope completely changed surgical methods.

SURGERY AND THE DISCOVERY OF ANÆSTHETICS.

The enormous impetus which the discovery of anæsthetics gave to surgery threatened to extinguish it as an art, for post-operative suppuration and pyæmia became endemic plagues in all populous cities where the surgeon plied his craft. It was on this unfavourable flood that some of the most notable ventures of modern surgery were launched, but their progress was slow. Traditions and methods die hard! A famous surgeon told me that when he began to perform operations under chloroform an old pupil of Guy's Hospital came in to see a leg amputated under the new conditions. When the surgeon pointed out the merciful nature of anæsthetic sleep and the change it had wrought in the methods of removing limbs, the old fellow sighed, and said he had a fancy for the old ways, and liked to see some blood and sawdust about! Sir William Fergusson delivered some lectures on the progress of anatomy and surgery at the Royal College of Surgeons of England in 1855 and described operations performed at that date in London, in this rough and ready style. You will acquit me of exaggeration when I state that the arena of an operating theatre in the first half of the nineteenth century smacked of the bull-ring, and the board in the old operating theatre, that bore a notice regarding the reservation of the arena for the surgeons and the first two rows of stalls for privileged spectators, recalls the notices *Sol* and *Sombra* in the Plaza de Toros.

In the early stage of a great discovery few men perceive its significance. When anæsthesia began to make progress, although surgeons recognised its importance, many years elapsed before it was fully utilised. Chloroform had been in constant use for operations before its usefulness in the reduction of dislocations was recognised. Operating theatres had iron bars and racks fixed to the walls and ring-bolts let into the floor for the attachment of cords and pulleys employed in the forcible reduction of dislocated shoulders and hips. In the Middlesex Hospital the dislocation fixtures and tackling were abolished with the old operating theatre in 1895. To-day a dislocated hip is reduced with the help of chloroform without pulleys, almost in the twinkling of an eye. When done expertly it resembles a conjuring trick. Let me briefly describe an actual case to show what harm sometimes followed the use of pulleys in reducing a dislocated hip. In 1889 the chief officer of a ship had his hip dislocated by a derrick-boom falling upon him during a voyage in the Atlantic Ocean. The captain attempted to reduce it. As a preliminary the patient drank half a bottle of brandy and 50 drops of laudanum. Being drunk he was fastened by a perineal band to a ring-bolt on the deck and ten seamen under the superintendence of the captain hauled steadily on the leg. Their efforts were unavailing. Four days later the ship touched the Canary Isles and the officer was sent ashore; the head of the thigh bone was promptly reduced by a surgeon under chloroform. On recovering the patient was unable to walk without pain. When the limb was extended he felt a pricking pain down the back of the thigh to the knee, then it divided and "one stream of painful sensations" ran down the back of the leg and the other along the front of the leg to the toes, and the sailor found it hard to kick against the pricks. I saw him in London and came to the opinion that the efforts of his shipmates had broken the rim of the acetabulum and a spicule of bone interfered with the great sciatic nerve. By means of an incision in the buttock the nerve was exposed as it issues from the great sciatic foramen. I found a hook-shaped piece of bone on the rim of the acetabulum in such a position that its sharp end

pricked the nerve when the limb was extended. This piece of bone was removed. The officer recovered and reported himself in good health 20 years afterwards.

The utility of chloroform in the diagnosis of hysterical contractures, phantom tumours and spurious pregnancy was its last merit to be appreciated. The surgery of the viscera is one of the remarkable extensions that followed the introduction of anæsthetics. Abdominal organs such as the spleen and omentum were removed when extruded through accidental rents made by knives, spears, swords, scythes, sickles, cart wheels, or similar forms of violence, and extruded intestines were returned with success centuries before the discovery of ether and chloroform. Cæsarean section was successfully performed in Roman times, and, many a child, to use Shakespeare's phrase, "was from his mother's womb untimely ripp'd." This form of delivery has been effected by midwives and butchers; by a patient on herself, and by the horn of a mad bull; in some instances mother and child survived. The success that followed this inartistic mode of delivery is instructive; 40 years ago Cæsarean section had an astounding mortality when performed by surgeons, whilst the spayer and gelder carried out his calling with almost invariable success. Lister unravelled the riddle. To-day wounds made and closed in the course of a surgical operation unite with a certainty that ceases to attract attention. Surgeons rarely pause to think on what would happen if surgical wounds failed to heal. In the pioneer days of abdominal surgery the incisions often failed to unite and such patients frequently died. I shall later on place facts before you to show that failure of intestinal wounds to unite is one cause of the high mortality following operations for cancer of the colon. Union of healthy intestine takes place quickly and perfectly.

NEW DISEASES AND THE PLAGUES OF EGYPT.

We marvel to-day at the frequency of the disease called appendicitis that became endemic in great centres of civilization in the last quarter of the nineteenth century. This disease occurred sporadically, and had been known as perityphlitis and iliac abscess for many years, but the cause of the present epidemic has not been discovered by pathologists or bacteriologists. A study of the history of diseases shows that they wax and wane. In the fourteenth century lepers were common, and leper houses were as numerous in Europe and the British Isles as lunatic asylums to-day. Leprosy lingered longest in Scotland. I thought it probable, reflecting on the prevalence of leprosy in Iceland and Norway, that there may be some lepers in the northern islands of Scotland. I have been assured on reliable authority that there is no leprosy in the Orkneys. Whilst pondering on the absence of this disease in Britain, doubts arose in my mind on reading in Lord Strathcona's will[1] a bequest of £5000 to the Right Hon. John Burns for a home for 50 lepers in the United Kingdom, none of the sum to be expended upon lepers coming into the kingdom.

In Europe, generally, leprosy diminished greatly without any recognised cause in the fifteenth century, but its decline was coincident with a great increase in syphilis. One disease tramples out another. In the vegetable world grass, and what we call weeds and the Bible tares, choke the nobler plants. When from accidental causes weeds are held in check, the suppressed plants revive and flourish again. It was a great discovery to detect the part played by insects as unconscious pimps in the fertilisation of flowers. No one can doubt that the disappearance of many species of flowering plants and variations in the abundance or the scarcity of particular species of flowering plants depend not merely on favouring conditions of weather, but on the abundance or scarcity of the insects that act as vectors of the precious pollen from the flowers of one plant to the flowers of another of the same species. Diseases supply parallels. To-day we are staggered by the important observations that many infections are conveyed from man to man, man to beast, and from beast to man by insect agency. Flies act as vectors of the parasites of sleeping sickness, gnats spread filaria, malaria, and yellow fever; fleas infect man with plague; and bugs can convey the leprosy bacillus.

The famous plagues of Egypt, fraught with such important consequences to the Israelites, were intensified by flies. When the narrative is considered in the light of modern knowledge it is a fair inference that the dust storm which fouled the Nile water and rendered it undrinkable killed the fishes and caused the frogs to take refuge on the land. The dead fishes and frogs provided breeding places for flies, and they hatched out in myriads.

During the last decade the fly has come to be regarded as a conveyor of disease, and the indictment is very strong. The biting fly conveys parasites in its proboscis, and the common non-biting fly carries on its body, legs, and wings the infective agents of typhoid fever, tuberculosis, ophthalmia, and perhaps small-pox. The sequence of the Mosaic visitations is significant; the plague of flies was followed by a murrain among beasts and boils and blains on the Egyptians. The death of the children was the last plague, and it is the last to be explained by modern science. Dr. E. H. Ross was medical officer in Cairo in 1909. He tells us the spring of that year was ushered in by a heat wave on May 1st, and the temperature rose to 102° F. in the shade. Fourteen days later the greatest plague of flies ever remembered appeared in the city. Food, milk, and fruit were contaminated by them. In two months 3000 children under 5 years succumbed to enteritis—a disease due to infection. It is not an unreasonable assumption that the death of the Egyptian children, which induced Pharaoh to let the Children of Israel go, was due to an epidemic of infantile enteritis spread by an enormous swarm of "divers sorts of flies."

One of the greatest plagues which troubled surgeons and destroyed millions of lives is known as suppuration or pyosis; it was spread widely by surgeons. When Pasteur discovered the cause of fermentation and Lister gave this discovery a practical application in the daily work of the surgeon, it was not suspected for many years that the most dangerous items in a surgical operation were the infected instruments and fingers of the surgeon. The importance of this observation cannot be over-estimated; surgeons admit its truth by wearing sterilised rubber gloves when performing operations.

THE MICROSCOPE IN SURGERY.

It is usual to ascribe the remarkable progress of surgery to the discovery of anæsthesia and the perfection of methods designed to prevent wound infection, but we must not forget the most important was the invention of the microscope; without its assistance the minute bodies which

[1] The Times, May 28th, 1914.

effect such great changes in organic and inorganic nature, and cause so many varieties of infective disease in animals and plants, would have remained not only hidden but unsuspected. This important instrument of research, perfected by earnest workers mocked at as "brass and glass men," is now indispensable in clinical research. Every improvement in the construction of the microscope has led to an increase in knowledge of the cause of disease. It has also become a means of popular instruction and amusement. Even embryologic processes are displayed to interested pleasure seekers on kinematographic films in "picture palaces," and school children are instructed in physiology, including the microscopic features of the blood. The numerical estimation of blood corpuscles is a regular exercise for the clinical clerk, and corpuscles are scrutinised in the laboratory by experts with microscopes as diligently as physicists examine the solar disc with telescopes for sunspots. Specks in the white and in the red corpuscles, barely visible to the highest powers of the microscope, may have more influence for evil on the health of a community than a sunspot big enough to be visible to the naked-eye exercises on the weather.

Derangements of the functions of blood-forming organs, especially the red marrow, and the significance of an excessive production of leucocytes have come to be so thoroughly appreciated by surgeons that under certain conditions an excessive proportion of white corpuscles in the blood is a more emphatic bar to a surgical operation than sugar in the urine. It is in this direction that the increase of pathological knowledge, especially the form of it called clinical pathology, will influence operative surgery in the future. The light microscopic studies of the blood throw on leukæmia acts as a danger signal to the surgeon when contemplating the removal of an enlarged spleen. The extirpation of a leukæmic spleen is always followed by death, and this experience is crystallised in practice, for an abdominal tumour resembling a spleen always suggests a blood count.

THE INFLUENCE OF CHEMIOTHERAPY ON THE SURGERY OF THE CENTRAL NERVOUS SYSTEM.

Disease was formerly regarded as something that entered the body, and the idea of evil spirits or devils entering men and women led, even before the dawn of Christianity, to surgical practice consistent with such belief, for there is evidence that the skulls of epileptics were trephined to afford incarcerated evil spirits a chance of escape. Fifty years ago our knowledge regarding the physical condition of the brain and spinal cord was of an elementary kind. It was the custom to teach that the cerebro-spinal fluid served as a waterbed for the brain in order to preserve it from harmful concussions. In my student days this teleological explanation tickled my fancy, and I suggested to the lecturer on anatomy when he waxed enthusiastic, after the style of Hilton, on this wise precaution of nature, that the explanation was absurd, for the relative bulk of brain and cerebro-spinal fluid resembled an ironclad in a duck pond. Now cerebro-spinal fluid is used as a medium for inducing temporary paraplegic analgesia—a method of conscious anæsthesia of great advantage to the surgeon when he is called upon to operate in conditions where a general anæsthetic would be attended with unusual risks. The diagnostic importance of cerebro-spinal fluid obtained by lumbar puncture is not only great, but its utility is increasing. Examination of samples of the cerebro-spinal fluid obtained by tapping the spinal theca is a routine in diagnosis.

Flexner's demonstrations, that the olfactory nerves are routes by which the microbes of influenza and cerebro-spinal fever infect the central nervous system, add a new interest to the physiology of those remarkable secretory organs in the brain called "choroid plexuses." In discussing influenzal meningitis he tells us that the fluid secreted by the choroid plexuses in infected monkeys contains an antiserum which escapes by the meningeal veins, and it may become possible to arrest the development of bacilli in the blood by means of compounds injected into the cerebro-spinal fluid. Here is a method of specific therapy unsuspected in our wildest dreams: Science transforming the cerebro-spinal fluid into a pool of Bethesda! Enterprising surgeons are now devising methods by which they can "trouble" the pool to the best advantage. No one can doubt that bacteriologists are in their methods as ingenious as surgeons. Crowe and Cushing ascertained that urotropin (hexamethylenamin) given by the mouth is excreted into the cerebro-spinal fluid and inhibits the growth of pyogenic bacteria. Surgeons turn this observation into practical account; it is now the custom to administer urotropin internally two or three days before an operation on the brain or spinal cord, and continuing it for a few days afterwards. Post-operative meningitis occurs occasionally in spite of it!

Orr and Rows have found that micro-organisms use neural lymphatics as routes for infecting the cord. Thus a bedsore or any septic area of the skin can lead to an infection of the spinal cord at a spot corresponding to the roots of origin of the implicated nerves. This will intensify the interest of surgeons in neuritis complicating septic lesions. The brilliant demonstrations that spirochætes use the lymphatics of nerves as avenues for invading the spinal cord will modify the treatment of syphilitic diseases of the cord. Intrathecal injections of salvarsan, in common with all arsenical compounds, irritate the spinal cord. To overcome this difficulty salvarsanised serum obtained from the patient is injected into his cerebro-spinal fluid and tolerated. This is a good example of practical ingenuity.

The results of surgical enterprise on cerebral tumours are unsatisfactory; the mortality is great and the condition of the survivors in many instances sad. The indefiniteness of gliomatous formations makes them extremely unfavourable for operation, to say nothing of the difficulty in localising cerebral tumours in non-motor areas. It is probable that compounds will be discovered that can be injected into the cerebro-spinal fluid and cause gliomas to shrivel in the same way that gummas disappear under potassium iodide, mercury, or salvarsan, and thus abolish some of the most uncompromising operations of modern surgery.

SURGICAL GAMBLING WITH MALIGNANT DISEASE.

Investigations of the minute structure of morbid growths have been mainly useful in separating the so-called benign tumours from those which inevitably destroy life. Thirty years ago the two groups were regarded as distinct. It is true that type forms can be distinguished as innocent or malignant, but each genus of the so-called innocent group, with the exception of lipomas, contains species in which the histolgoical features of

innocency shade away into those indicating malignancy. This is a matter of great importance when a declaration of malignancy entails the sacrifice of an organ or a limb. The horror patients entertain of malignant disease and the stigma they think it imprints on the family reputation lead to willing submission when the surgeon offers operative treatment. It is an impression deeply ingrained in the profession that the presence of malignant disease justifies an operation, however extensive or dangerous, for its relief. Let us satisfy ourselves that surgical gambling with malignant disease is justified. There are two organs in the body often the seat of cancer and often attacked by surgeons—the uterus and colon—in connexion with which this question may be fairly considered.

The results of removal of the uterus for cancer in its neck are by no means uniform even when the conditions are apparently similar. The microscopic features of cancerous growths do not help in explaining variations in the clinical course of the disease. There are intrinsic and extrinsic factors concerned in estimating the malignancy of uterine cancer which have only recently been appreciated. Our predecessors in the art of surgery recognised a remarkable alteration in the appearance of patients the subjects of advanced malignant disease, which they expressed by the phrase "cancerous cachexia." This "bad habit" of body has no special relation to cancer; it is due to the entrance into the circulating blood of toxic substances secreted by the bacteria and cocci which colonise cancerous growths in exposed situations. The relation of bacteria to cancer is a matter of first-rate importance to the surgeon, and influences his work very markedly. I find, as a rule, that non-ulcerating cancers of the breast are sterile. Cancer of the tongue usually swarms with streptococci, and the neck of the uterus when cancerous is colonised by staphylococci or streptococci, and the coli group. This led me to make bacteriological investigations of the necks of cancerous uteri before undertaking their removal; I quickly found that the fate of a patient submitted to operation for this disease depends not so much on the skill of the surgeon as on the nature of the infecting micro-organism. Many patients submitted to hysterectomy for cancer of the neck of the uterus die within a few days of the operation from septic peritonitis, pulmonary embolism, or acute bacteriæmia if the cancerous tissues are colonised by streptococci.

In the general hospitals of London during the year 1912 the mortality of radical hysterectomy for cancer of the neck of the uterus varied from 10 to 48 per cent. This forms a striking contrast to hysterectomy for fibroids of the uterus, for the mortality of this operation in the general hospitals of London is about 2 per cent., the difference being almost entirely due to the presence of bacteria and cocci in the cancerous tissues. It cannot be too emphatically stated that the virulence of cancer, as a rule, depends on its septicity, and cancers in exposed situations are rapidly destroyed by bacteria.

SEPSIS IN RELATION TO CANCER OF THE LARGE INTESTINE.

The relationship of sepsis and cancer is an important matter for the surgeon. During the last ten years there has been great activity in developing radical measures for the treatment of cancer of the large intestine. The results are not gratifying. Resections of the cæcum, or portions of the colon, are attended with a high rate of mortality, and of those who survive operation early recurrence or dissemination is the rule. Surgeons know this, and in order to improve the results of operative treatment painstaking investigations have been made on the distribution of the blood- and lymph-vessels of the colon. In spite of much admirable work and surgical enterprise, cancer of the large intestine is as opprobrious to the surgeon as hysterectomy for cancer of the neck of the uterus to the gynæcologist, and for the same reason—sepsis. The mortality of radical operations for cancer of the cæcum and colon in London during 1912 was 30 per cent. In the London Hospital during the years 1901–11 resection of cancerous portions of the large bowel was performed on 95 patients; 49 recovered and 46 died. (Sir Frederic Eve.) In these days of boastful surgery this may be called a superlative death-rate.

The radical method of dealing with cancer of the colon consists in free resection of the cancerous portion in favourable cases; this requires a complicated operation for the reunion of the bowel, entailing a sutural junction that must be not only watertight but gastight. One of the first requisites for immediate union is the absence of pyogenic bacteria. In operations for intestinal anastomosis success depends on early and firm union of the apposed surfaces of the bowel. There is nothing more amazing in relation to the healing of wounds than the rapidity with which peritoneal surfaces join when they are carefully sewn together with sterile sutures. In regions of the gastro-intestinal tract free from pyogenic bacteria union occurs after surgical operations safely and quickly; thus a gastro-jejunostomy in the hands of competent surgeons is devoid of risk from septic peritonitis. How different the picture for radical operations performed for cancer of the colon! Septic peritonitis destroys the lives of at least 30 per cent. of those who submit to it. Death is due to septic peritonitis from infection during operation, leakage at the junctions, or failure of union due to the colon bacillus and its congeners.

Cancer of the colon is an extremely insidious disease; in the early stages it is symptomless until it becomes septic or obstructs the flow of fæces, then the patient complains of pain. When cancer becomes septic it sloughs and bleeds. Infected cancer impairs the patient's health because the toxins brewed by the schizomycetes colonising it enter the circulation. Colic cancer sometimes leads to abscess when it is infected by the coli group The frequency with which visceral cancer mimics inflammatory conditions and misleads physicians and surgeons alike is due to sepsis. The appreciation of the causes of failure in the surgical treatment of colic cancer should exercise some influence for good. Statistics indicate that the risks of operations performed for cancer of the colon are as great as for the operations of general surgery in pre-Listerian days, with this difference—the mortality of that period was due to sepsis from infection of the wound that often arose from the use of dirty sponges, instruments, sutures, and the septic fingers of the surgeon and assistants. In operations on cancerous viscera the diseased tissues are already infected, and taint the fingers and instruments of the surgeon, hence the danger of such operations.

SURGICAL COQUETRY.

It is by no means uncommon to see surgeons clad in sterilised overalls, gloves, caps, masks, and top-boots, resecting a cancerous segment of colon

swarming with pyogenic micro-organisms. This can only be described as surgical coquetry. Some of our methods for destroying bacteria in the course of an operation are almost as clumsy as attempts to kill fleas with bludgeons.

In order to improve the results of operations for visceral cancer means must be devised for sterilising them, or a specific remedy found for cancer. There are indications that both methods will be available. Cancerous organs are sometimes submitted to the action of radium as a preliminary to operation, and histological examinations of malignant tumours affected by radium emanations show that the gamma rays find distinctions in tissue cells imperceptible to the microscope. We need a compound which can be introduced into the circulation to destroy streptococci and its kind. This is no idle dream. Huxley suggested that it would become possible in view of the discoveries in therapeutics "to introduce into the economy a molecular mechanism which like a very cunningly contrived torpedo shall find its way to some particular group of living elements, and cause an explosion among them, leaving the rest untouched." This sounded fantastical in 1881, but Ehrlich has discovered "molecular mechanisms" more subtle. There are drugs (organotropic) which injuriously affect the organs of the body and fasten on them like aniline staining reagents cling to special tissues. He speaks of compounds that injure the intestinal tract of mice, and they die from profuse diarrhœa. Sometimes the red blood corpuscles are attacked, and the animal dies from severe anæmia. Curious drug affinities occur in the central nervous system; in mice the vestibular nerve is attacked, and they gyrate like Japanese waltzing mice. The derivatives of phenylarsin acid attack the optic nerve, and large doses of atoxyl produce blindness.

What surgeons urgently need is a molecular compound which will either kill the bacteria and cocci that colonise cancer or neutralise their harmful toxins in the same way that salvarsan renders the spirochætes inert without destroying the organs or tissues of their host.

THE SURGEON OF THE FUTURE.

In pre-Listerian days the path to surgery lay through the dissecting room. A thorough practical knowledge of the anatomy of man was and is indispensable to a sound surgeon. Many surgeons whose names are prominent in the history of surgery—from John Hunter to Fergusson—taught anatomy by dissection. Surgeons no longer act as demonstrators of anatomy or conduct post-mortem examinations; the principles of antiseptic surgery forbid such occupations. The practical training in the dissecting room and post-mortem room teaches men something they cannot learn from books—the appreciation of tissue; this means, in plain terms, the power to recognise organs and tissues, normal and abnormal, at sight or by touch in the course of an operation.

Surgeons are of two types: they are either craftsmen or biologists. The surgical craftsman invents variations in technique—metal plates, wires, and screws for bones; or fancy methods of suturing wounds. Some expend their ingenuity on surgical cutlery and improve the knives and needles. The utility of a simple tool such as the clip forceps is inestimable. In spite of much ingenuity among surgeons an ideal ligature material awaits discovery. Clever contrivances like the laryngoscope, bronchoscope, and cystoscope have revolutionised special branches of surgery. Another useful instrument, the œsophagoscope, requires for its successful use a surgeon with the instincts of the sword swallower and the eye of a hawk. Recently, through the kindness of my colleague, Alfred Johnson, I witnessed through the cystoscope a stone slowly extruded from the vesical orifice of the ureter.

The biological surgeon studies pathology in its broadest aspect and investigates, in the laboratory, problems of morbid anatomy and bacteriology. The diagnostic value of reports issued from the laboratory by the pathologist and the bacteriologist, to be of value, must be estimated with the help of clinical experience. If the surgeon has had no experience in bacteriological methods he must accept the reports from the laboratory with the hopefulness of a patient swallowing physic compounded from a prescription he does not understand and which he is often unable to read. The training of surgeons in clinical pathology is of great importance, and it requires little foresight to recognise that for men ambitious to attain high places in surgery the high road lies through the pathological institute.

Morbid histology has been and still is of great use in classification, diagnosis, and prognosis of morbid growths; for a knowledge of their cause new methods are required. For these we fix our attention on the men along the sky-line—bacteriologists, experimental physiologists, physiological chemists, and physicists; the future lies with them. As it is of the utmost importance that surgeons shall have a practical knowledge of clinical pathology, it becomes essential to bring the wards, operating theatres, and laboratories into the closest intimacy. From this union of workers means will be found for curing diseased organs by chemiotherapy rather than by extirpating them. Until the right compound for curing cancer has been discovered surgeons will continue to excise cancerous viscera, and this makes it more necessary to discover means for ridding cancer of pyogenic bacteria.

The skill, ability, and dexterity with which surgeons remove a kidney, the uterus, or perform extensive resection of the intestine, great and small, can be witnessed almost daily in the splendid hospitals of large cities, but surgical effort is handicapped by streptococci and the coli group, which are very resistant to chemiotherapy. There is something fascinating in submitting septic morbid growths to what Ehrlich picturesquely terms a "bacteriological siege." Our difficulty is to destroy these seeds of disease without serious damage to the organs and the delicate tissues in which they flourish. The antiseptic solutions employed against bacteria are powerful cell poisons. We need therapeutic agents which destroy parasites but do not kill the tissues of the host. Acute minds are busy with these problems, and surgeons may hope to remove visceral cancer with no more risks than attend gastro-jejunostomy or hysterectomy for fibroids.

The magical effects of salvarsan on the lesions of syphilis, acute and chronic, lead us to hope that this compound will assist in the elimination of cancer of the mouth and tongue, for in these situations cancer is often engrafted on chronic syphilitic lesions. It is reasonable to believe that within a few years surgeons will notice a marked decrease in the number of men with cancer of the lips, gum, tongue, and pharynx, and of women with cancer of the vulva. The extinction of these forms of cancer will relieve surgeons of some of the most

distressing and unsatisfactory operations they are called upon to perform.

In regard to the cure of malignant disease, there is most hope in chemiotherapy. In detecting the cause of cancer histology has proved a false dawn, but, like that peculiar light which precedes the dawn in the tropics, it is very fascinating. Who can tell how long we shall have to wait for the real dawn! We need not despair; the zeal, enthusiasm, and acumen of laboratory workers fill us with the hope that the ideal of all practitioners of medicine and surgery is attainable—the control of all forms of infective disease.

ON GASTRIC ULCER, WITH SPECIAL REFERENCE TO ITS TREATMENT BY GASTROSTOMY.[1]

BY SIR W. WATSON CHEYNE, BART., F.R.C.S. ENG.

IN thinking over the question of ulcer of the stomach the first point which occurs to me is, What are the chances of an ulcer in this situation healing if left to itself? Opinions on this point vary very much; some physicians say that the chances are good, while many surgeons take a much more pessimistic view. In considering this matter we must bear in mind that our conclusions are apt to be based to a large extent on experience in hospitals, and that it is only as a rule the most severe cases which find their way into these institutions.

In one of his numerous and enlightening articles on the subject of gastric ulcer Dr. W. J. Mayo gives various statistics by different pathologists of post-mortem findings, in which evidences of old ulceration of the stomach were present. Such evidences have been found in a surprisingly large number of cases, varying from 1·32 per cent. at the lowest estimate up to as many as 20 per cent. of all post-mortem examinations. The numbers seem to rise according to the amount of attention which the pathologist pays to this point; in other words, the traces of old ulceration are often not easy to find; hence the diversity in the results of different observers. Now a very large proportion of these post-mortem findings are healed ulcers, and as the number of persons who die from gastric ulcer and its sequelæ, including malignant disease, is very much less than the above findings, it follows that a very large proportion of gastric ulcers must heal without any special treatment. I have not been able to get out the proportions of deaths from gastric ulcer and its sequelæ, for they are not clearly stated in the statistical returns, but those from gastric cancer in proportion to other causes of death are about 0·034 per cent., and of perforation of the stomach probably rather more. I do not think, therefore, that we should take too gloomy a view of the possibility of healing of these ulcers.

A second question follows on this—viz., if an ulcer heals, what are the chances of its remaining permanently healed? We know that on the external surface of the body ulcers may break down from time to time if the original causes again come into play, and the history which we so often get in cases of gastric ulcer points to a similar course in many cases, a history of intervals, sometimes long intervals of comfort, during which presumably the ulcer has healed, followed by outbreaks indicating that the ulcer has broken down again. I often wonder whether the same thing may not occur in cases where healing of the ulcer has been brought about by surgical procedures such as gastro-enterostomy. (I use the term "gastro-enterostomy" here so as to include gastro-duodenostomy as well as gastrojejunostomy, the former being to my mind the best operation in cases where it can be performed.) I am afraid that there is already evidence that this may happen, and if so it becomes a question how far we should go in the direction of such procedures as artificial closure of the pylorus in order to make the new gastro-enterostomy opening act satisfactorily, thus producing a permanent pyloric obstruction and destroying the natural action of the stomach for ever.

Now let me recall to your minds the natural history of ulcers on the skin and the causes which interfere with healing. Take the case of an ulcer of the leg. In that case we find that there are various obstacles to healing. Thus the cause of the ulceration may be the growth of some specific organism which the natural defensive powers of the body are unable to overcome. Such causes are tubercle, syphilis, or bad infective conditions. Again, very potent hindrances to healing are movements of the parts and irritation by chemical agents, the latter being either applied with the view of promoting healing or developed in the part as the result of decomposition. A third cause is imperfect nutrition of the part, either from some local trouble, such as varicose veins or induration of the tissues around the ulcer, or from some general condition. And, lastly, various circumstances preventing contraction of the sore, such as the aforesaid induration or the adhesion of the base of the ulcer to surrounding structures, also form a serious obstacle to healing. Remove these various causes and healing rapidly occurs.

Now if we take the case of ulcer of the stomach, infective conditions interfering with healing, such as tubercle and syphilis, are comparatively rare and may be left out of account in the present discussion, and I believe that the chief causes which interfere with healing are the constant movements of the stomach in connexion with the digestion of the food, the presence of the acid gastric juice, and the malnutrition of the patient. For some hours after taking food the stomach is in constant movement, triturating the food and mixing it with the gastric juice, and during that time the ulcer is being torn and moved in a way which cannot be conducive to healing, and these movements are apparently more marked when ulceration is present. And, further, the presence of an ulcer sets up pyloric spasm which, apart from any cicatricial contraction in the neighbourhood of the pylorus, still further increases the muscular activity of the stomach. Again, the irritation of the ulcer by the acid gastric juice forms a very important obstacle to healing, and this acid secretion is increased by the presence of the ulcer, as shown by the constant occurrence of hyperchlorhydria. Although the normal epithelial cells are no doubt specially endowed with the power of resisting the action of the gastric juice, this can hardly be the case when they become weakened or diseased, nor is the granulation tissue on the surface of the ulcer likely to possess the same power. A further unfavourable circumstance in the case of gastric ulcer is the general malnutrition of the body from the want of food and the anæmia from loss of blood. Additional obstacles are the induration of the tissues around the ulcer which occurs in bad cases, and adhesion of the ulcer to surrounding parts.

Now our present methods of treatment, whether surgical or medical, do not fully meet the

[1] Some remarks made at the discussion on the Treatment of Gastric Ulcer at the meeting of the Clinical Congress of Surgeons of North America, London, July 27th, 1914.

requirements for healing in all cases. Of the medical methods the best is no doubt to abstain altogether from feeding by the mouth and to substitute rectal feeding, but experience shows that the nutrition of the patient cannot be maintained for any length of time by rectal feeding, while the rest given to the stomach, especially as regards chemical irritation, is very imperfect.

Nor are our present methods of surgical treatment altogether satisfactory. Gastro-enterostomy does not place the stomach at rest, the food is still churned in the stomach, and the artificial opening is presumably closed by muscular action while this trituration is going on; indeed, I should think that there must be increased muscular action in order to close the artificial opening and so prevent the food passing out of the stomach too soon. On the other hand, by circumventing pyloric obstruction gastro-enterostomy no doubt diminishes the hyperchlorhydria to a large extent, and I believe that it is chiefly to this action that the good results which follow gastro-enterostomy in suitable cases are due. Excision of the ulcer is no doubt more efficient, and is quite rightly taking a more and more prominent place in our procedures, but it is a severe operation and not applicable to all cases, and it may leave other troubles behind.

On the whole, I think we may truly say that while one or other of the various methods of surgical treatment at present in vogue will generally rectify a good many cases of gastric ulcer, they do not meet all cases, and it cannot be said that they imitate the natural methods of cure, which I think is what we ought always to aim at. A certain number of cases still remain in which the results are not altogether satisfactory, in which the ulceration is not completely arrested, or in which fresh ulcers form or other inconveniences result. And further, there is a considerable number of cases in which none of the present surgical methods of treatment are really satisfactory; for example, ulcers situated near the cardiac end of the stomach, adherent ulcers on the posterior wall, and small multiple ulcers or erosions of the mucous membrane.

This being the case the question arises, Are we at the end of our surgical resources for the treatment of this condition? Is the only problem of the future to improve our technique? I do not think so. For a considerable time I have thought that in cases unsuitable for our present methods it might be worth while to perform gastrostomy and give the stomach a much more complete rest than can be obtained in any other way. In April last a case turned up in which I thought it justifiable to depart from the usual surgical procedures and put this idea into practice. The patient was a lady, aged 65, who presented the various symptoms typical of ulcer of the stomach, but there was no evidence of organic obstruction. The pain was high up and to the left side, and while it was aggravated by taking food the patient also suffered constant pain referred to the left side of the middle line. A bismuth meal indicated that an ulcer was situated towards the cardiac end of the stomach, a small portion of the bismuth remaining in a pocket at that part of the stomach for a long time, while the rest of the stomach was emptied more quickly than normal.

I operated and found an ulcer of considerable size on the posterior surface of the stomach, high up near the cardiac end and firmly adherent to the parts behind, and on the anterior wall of the stomach at the same point there was also a commencing contact ulcer. Now the conditions were most unfavourable for excision; indeed, I doubt if it was at all possible, and certainly it would have been a most dangerous procedure. I have also long ago come to the conclusion that gastro-enterostomy on the distal side of an ulcer is useless, and that to block the pylorus in order to make the gastro-enterostomy opening functionate is not a satisfactory method of treatment in these cases. What I did, therefore, was to leave the ulcer alone and to perform gastrostomy beyond the ulcer by Witzel's method, pushing the catheter through the pylorus and for about three inches along the duodenum.

The patient was fed through the tube very soon after the operation, and the tube was left *in situ* for six weeks, when it was removed and the wound allowed to heal up. No food was given by the mouth for five weeks, and then small quantities of peptonised milk, Benger's food, &c., were commenced, in order to see if any discomfort resulted. For the whole of the six weeks the patient was given carbonate of bismuth and bicarbonate of soda by the mouth, partly as an antacid in case any hydrochloric acid was present in the stomach, and partly as an antiseptic and a good application to the ulcer (this especially refers to the bismuth). I chose six weeks as the period for keeping the gastrostomy wound open, because, as a rule, that length of time is more than sufficient for the healing of a much larger callous ulcer under favourable circumstances on the surface of the body. The immediate result of the operation was that the patient at once lost all the pain and discomfort from which she had previously suffered, and rapidly began to put on flesh and regain strength, and there was no trouble about the wound which healed in a few days, except where the tube passed down to the stomach. When tested with food by the mouth at the end of five weeks no discomfort was caused, and on leaving out the tube a week later the wound closed in a few days and since then she has had no further trouble.

Now, if we consider the effect of the gastrostomy in this case, the first point is that the stomach was placed completely at rest both mechanically and chemically. No food was introduced into it, for the food introduced through the tube passed directly into the duodenum about the point of entrance of the bile and pancreatic juice. There was therefore no necessity for any churning movements and presumably the muscle remained inactive. As food was not introduced into the stomach it did not come in contact with the ulcer and did not undergo any decomposition in the stomach, and I fancy little or no gastric juice was secreted; whatever secretion there was evidently escaped easily through the pylorus alongside the tube. Further, the patient was nourished satisfactorily, so that as far as health and resisting power were concerned, everything was most favourable for the rapid healing of the ulcer. Contrast this result with that after gastro-enterostomy. The main point in favour of the latter operation would be that the remedy is a permanent one. The result after gastro-enterostomy is, however, not always permanent, and I can, of course, say nothing about the permanency of the result after gastrostomy. Apart from ulcers unsuitable for excision by reason of their situation near the cardiac end of the stomach and their fixation to important structures, there is a considerable class of ulcers which are small and not easily detectable, merely superficial erosions, which nevertheless may give rise to a

good deal of hæmorrhage, and which are unsuitable either for excision or for gastro-enterostomy. It seems to me that gastrostomy is eminently suited for such cases.

Further, I believe that the question of gastrostomy is worth while considering in cases of adherent ulcers nearer the pyloric end which cannot be excised in preference to gastro-enterostomy and closure of the pylorus. The advantages which I have just pointed out are very great, and I do not believe that the tube lying in contact with the ulcer would be any disadvantage. Indeed, we know that in the case of stricture of the urethra the quickest way of getting rid of the induration of the walls is to tie in a catheter for a few days, and it seems to me that the same result would probably follow in an indurated ulcer of the stomach. I should, of course, combine infolding of the ulcer with the gastrostomy whenever possible. I venture to bring this suggestion before you because I should like those who have greater opportunities than I have to give it their most careful consideration. It seems to me that it is more on natural lines than some of our present procedures, especially that of artificial closure of the pylorus.

While, so far as I know, gastrostomy has not previously been suggested as a method of treating gastric ulcer, jejunostomy has been carried out in a considerable number of cases of ulcer of the duodenum on much the same principles, but although it has its warm advocates the idea does not seem to have taken hold. It seems to me that jejunostomy for duodenal ulcer does not possess the advantages that gastrostomy offers in the case of certain gastric ulcers. Ulcer in the duodenum seems to set up, and keep up, hyperchlorhydria and movements of the stomach, and this may continue even though the patient is fed through a jejunostomy opening. Indeed, I should not be surprised if, even in the cases of duodenal ulcer, a gastrostomy with passage of the tube well down the duodenum, combined with infolding of the ulcer, might not act better than jejunostomy, and might possibly take the place of gastro-enterostomy and occlusion of the pylorus in cases where the infolding of the ulcer did not produce serious constriction of the lumen of the duodenum.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Caxton House, Westminster, on July 22nd, with Sir Francis H. Champneys in the chair, when a number of midwives were struck off the roll.—A meeting of the Board was held at the same place on the following day, with Sir Francis H. Champneys in the chair, when a case of falsified birth certificate was considered. The secretary reported that the matron of a recognised training school had, with the examination schedule of one of her pupils, tendered a certificate of birth that had been tampered with. The Board directed (*a*) that the candidate be not admitted to the examination until a satisfactory explanation of the alteration of the birth certificate be furnished to the Board; and (*b*) that the attention of the matron be called to this matter in which she has failed in her responsibility, and that she be warned that serious notice will be taken of any failure in her duties to the Board in future. A request by the examiners of the Bristol examination centre asking the Board to hold examinations in Bristol every two months instead of every four months as at present was granted. A letter was considered from a certified midwife complaining of the conditions of midwifery practice in Bangor and the absence of inspection by the local supervising authority. The Board directed that the midwife be informed that the Board regrets the difficulties incidental to the practice of midwifery in Bangor, but has no jurisdiction over the county councils, which appoint inspectors, but they are referring the matter to the County Councils Association.

THE SELECTION OF THE METHOD OF OPERATION IN THE TREATMENT OF GASTRIC AND DUODENAL ULCERS.[1]

BY PROFESSOR FREIH. A. VON EISELSBERG.

IN spite of all the progress in diagnostics the method of operation in the treatment of gastric and duodenal ulcer can be selected only after the abdominal cavity has been opened. In the work of collecting my series of 434 patients on whom operations have been undertaken for ulcerative processes of the stomach my pupil, Professor Clairmont, has rendered me very special assistance, and in the following paper I shall refer to many interesting details in the work he is about to publish. Here in a few words is a summary of the result of our observations:—

1. Symptoms of perforation of the ulcer into the general peritoneal cavity call for immediate operation, irrigation of the peritoneal cavity, closure o the perforation, and in bad cases jejunostomy in addition for the purpose of administering nourishment.

2. In the other complication of ulcer which we fear so much—namely, hæmorrhage—operation is in most cases better left alone.

3. In typical stenosis of the pylorus, especially when in the case of a long-standing ulcer no new symptoms have occurred, gastro-enterostomy is the operation to be chosen. 60 per cent. of cases of stricture of the pylorus are completely cured by gastro-enterostomy, while in the cases of open ulcer gastro-enterostomy is only successful in 41 per cent. Among 334 gastro-enterostomies for ulcer of the stomach and duodenum and its complications 17 deaths occurred. Of these, 8 (nearly half) occurred through continued bleeding from the ulcer; therefore gastro-enterostomy is not in all cases a complete protection against continuance of the hæmorrhage.

4. Unilateral pylorus exclusion (which I did first in 1894) offers the greatest security in dealing with ulcer and its complications. It should receive special consideration if the ulcer is still fresh and causing much pain, and finally in cases of duodenal ulcer. It seems to offer better guarantee of stopping hæmorrhage, even though this guarantee is no complete one.

5. For ulcer situated at a distance from the pylorus simple gastro-enterostomy is not so feasible as in cases of ulcer of the pylorus itself. This Professor Clairmont was the first to show on the evidence of the collected experience of the clinic. It offers only 34 per cent. of successes as contrasted with 54 per cent. successful cases of pylorus ulcer.

6. High hydrochloric acid values of the gastric juice, by distinctly favouring the development of post-operative peptic ulcer, detract very much from the value of gastro-enterostomy and exclusion.

7. I have seen this post-operative peptic ulcer after operations done by myself and my assistants

[1] A paper read before the Clinical Congress of Surgeons of North America, London, on July 27th, 1914.

in the hospital as well as in patients who had been operated on by other surgeons, so that the growth of such an ulcer cannot have been attributed to our perhaps faulty technique. The danger of the formation of peptic ulcer occurs in the cases of high hydrochloric acid especially apparent in such cases where gastro-enterostomy was not strictly indicated. There are cases in which the history of the patient given by himself points to a gastric ulcer, but in which the signs of gastric ulcer are wanting at the laparotomy. There may be, perhaps, merely a relatively small stenosis of the pylorus—some adhesions or cicatricial tissue in the stomach. In former years it was more easy to decide on gastro-enterostomy in such cases. One regarded it as a safety valve, also a prophylactic against a stenosis occurring later and therefore being more serious. Since H. Braun made us familiar with the serious complication of post-operative peptic ulcer of the jejunum great care is necessary with reference to it. In cases when by autopsy *in vivo* I have found no tangible condition to indicate what one had expected to find judging from the history of the case, and nothing to show what sort of an ulcer it was, I have done an exploratory laparotomy simply and have refrained from doing what we may term a "'concession gastro-enterostomy." Among 16 cases of post-operative peptic ulcers of the jejunum which I have seen following gastro-enterostomies performed in my own clinic and some by other surgeons, a whole series of measures, some of them very complicated, were tried to reproduce normal conditions. Only 2 patients were cured, 4 improved, 3 unknown, 2 unrelieved, and 5 died. So we see that peptic ulcer represents a very serious complication.

8. In cases of ulcer situated at a distance from the pylorus, as well as in cases where there is a high hydrochloric acid value, transverse resection seems to me the operation of choice, as this of all other resections—as, for instance, extirpation methods of operation—gives the best security against subsequent complications. It must be made wherever there is the least suspicion that the tumour under consideration may be of a malignant nature. Of 269 patients on whom gastro-enterostomy was performed in my clinic, and who could be kept under observation for some time after, 41 died at a later stage of the disease, 13 from carcinoma, whilst 6 died with continuance of the symptoms of the ulcer. These later deaths speak decidedly in favour of the radical operation. Transverse stomach resection is also the correct operation when the ulcer has invaded neighbouring organs, as nothing except removal of the ulcer will be of any real assistance. Transverse resection as planned by Riedel, also warmly advocated by Payr and Küttner, is a relatively safe operation. We have up to January, 1914, done 11 transverse resections, to which 6 more cases can be added up to July 1st, making 17, and not a single death. I have never seen a peptic ulcer or any other harm after this operation. When transverse resection cannot be done method Billroth II. should be employed. Method Billroth I. is the third in order to be considered. Partial excision is to be entirely rejected.

In extreme cases only when other operations are not feasible, jejunostomy may be considered —as has been already suggested in cases of perforated ulcer, when the patient is so weak that he must be fed immediately after the operation. Jejunostomy makes it possible for nourishment to be given even on the operation table. Further, in cases of peptic ulcer in which for exceptional reasons excision is not possible, it is the easiest and most rapid of all operations for gastric ulcers, and above all it leaves the stomach undisturbed. As it has only been done in extreme cases one cannot wonder it has met with so little success, and that it is noticeable that so many cases of peritonitis have been associated with it. They were patients whose peritoneum had lost its power of resistance.

Vienna.

INTERNAL DERANGEMENTS OF THE KNEE.[1]

BY ROBERT JONES, F.R.C.S. IREL. (HON.), F.R.C.S. EDIN., CH.M. LIVERP.,
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WHEN your indefatigable and most persuasive secretary commanded me to deliver a short address before this large and representative body of surgeons I was elated by the honour but oppressed by the responsibility, but Dr. Martin told me that all I had to do was to relate my experiences, tersely and authoritatively. Twenty years ago I could have been as authoritative as one wished, for at that time I was less conscious of the need of experience. I have chosen the subject of derangement of the knee-joint because comparatively so little has been written about it in your own country, and this has always been a matter of great surprise to me, for your games like our own are rough, and we in England know to our cost that your youth are very skilled and very strenuous. I am credibly informed that the anatomy of their knee-joints differs but little from our own, and I am forced to conclude either that their cartilages are more securely placed than ours, or, which is most unlikely, that the condition is not so generally recognised as it should be.

By far the most common derangement of the knee is injury to the internal semilunar cartilage. It occurs eight times as often as does injury to the external meniscus. The internal cartilage is more firmly fixed and is not allowed the give-and-take movement vouchsafed the external, and in addition it bears a greater strain during the normal movements of the joint, often becoming thinned and frayed along its inner margin. The line of force is carried through the inner side of the knee in the normal relation of the femur to the tibia, while the abducted position of the foot when exaggerated produces outward rotation of the leg. The disproportion may be also due to the shape of the internal articular surface of the tibia which allows the internal condyle of the femur to glide backwards; thus the range of internal rotation of the femur on the tibia, which is a direct strain on the semilunar, is greater than that of external rotation. In nearly all cases the cartilage is displaced inwards, and on those rare occasions where a protrusion has been felt from the outside it is due to hæmorrhage following a

[1] A paper read before the Clinical Congress of Surgeons of North America, London, July 28th, 1914.

tear, a localised bruising of tissue or a buckling of cartilage accompanied by effusion which gives rise to an irregular outline of the articular margin. The most constant symptom of a displaced or fractured semilunar is a sudden inability to extend the knee. This generally comes on immediately after injury, and the fact is important from its legal aspect. The most frequent cause of the displacement or fracture is strain thrown on the internal lateral ligament while the knee is flexed and the tibia rotated outwards. In rare instances I have known a displacement occur while the knee is fully extended. The force necessary to cause the derangement in a first injury is usually severe, and the pain is acute. The injury may often be met with on the football field. The athlete drops, rolls on the ground nursing his knee. Assisted he hobbles off the ground with his knee flexed. When he arrives home the joint is painful and distended. If the cartilage is still displaced its reduction gives considerable relief from pain. The tender points of pressure are found over the internal lateral ligament and over the anterior horn of the internal semilunar. Any attempt to abduct the limb at the knee is acutely painful. Forced extension of the knee is painful over the site of displacement. If an injured semilunar is rationally treated after its initial displacement it stands a good chance of being completely cured. The first displacement is not often accompanied by any degenerative change; reduction, however, must be absolute. All movements of the cartilage must be prevented until union of the torn structures is complete, and no lateral strain must be allowed until the lateral ligament, so often injured, has had time to effect a recovery. There are many ways of reducing a cartilage, but if no anæsthetic be used I have always thought it wise to summon the assistance of the patient himself. I first fully flex his knee and rotate it inwards. I then tell him at the count of "three" to forcibly extend his own knee while we help him by pressure from above. In this way he materially assists the surgeon and simplifies the reduction. I have often in this way reduced displacements of several weeks' duration, and the reduction can usually be felt by the surgeon. If the displacement be corrected the patient usually knows definitely and at once, and the surgeon, if wise, will abide by his verdict. If the patient tells you the cartilage is still out he is generally right, and it is best to believe him. The knee should remain fully extended after reduction in all recent displacements. If the knee does not voluntarily remain completely extended the displacement is not corrected. Such a joint, with a clear history of semilunar injury, and strained or ruptured internal lateral ligament, should be treated by complete rest in full extension for four or five weeks. Instead of this, the patient is usually allowed to get up and walk in a week or a fortnight. This is a grave mistake, and in a majority of instances lays the foundation for a series of recurrences. The cartilages can only be retained in a fixed position when the limb is fully extended; they participate in all rotary and lateral movements of the joint. Rest of the limb in the fully extended position is therefore indicated, and as long as the effusion lasts the patient should be recumbent. Prolonged effusion relaxes by elongation all the protective structures of the joint; we should therefore aspirate if absorption be retarded. Elongation of the quadriceps with a subsequent weak knee is closely associated with prolonged and recurrent effusions. Massage can be employed while the knee is being rested in extension, and it is still more valuable to encourage the patient to practise contracting his quadriceps without flexing the joint. When the patient is up we should guard his internal lateral ligament from strain during walking, by directing him to walk with his toe slightly turned in and his foot inverted. This is made easy by raising the heel of his boot a third of an inch on the inner side to deviate body weight from the inner to the outer lateral ligament, just as we would do in an early case of knock-knee.

It is more common to see the case when the acute symptoms are over or when several recurrences have taken place, and we have to depend then upon the history which is usually definite enough. First we hear of an injury, it may be severe or very slight, it usually refers to abduction of the foot, to flexion and external rotation of the tibia. Locking of the knee may have occurred on the first occasion or not—synovitis practically *always* does, but even when locking has not occurred a giving way or slipping is referred to. The story of a reduction makes the diagnosis complete. If the knee be examined a few weeks after the accident the effusion will have gone, but there is often pain on pressure over the internal lateral ligament and above the tibial margin over the anterior horn of the semilunar. Pain is frequently felt in front of the joint on slight hyper-extension of the knee. At a still later stage recurrences and fresh effusions may have occurred accompanied by locking of the joint, the pain on each occasion being capable of definite localisation. Locking is the most definite and reliable symptom, and unless it occurs an element of doubt must always remain. On exploring the knee one frequently finds a fractured or displaced semilunar where there has been no clear history of locking, but the discovery is made, if not with surprise, with a distinct sense of relief. The patient will often only be prepared to admit to a something yielding on the inner side of the knee which gives him a sense of insecurity. This may involve only a momentary inconvenience, or it may occasionally be accompanied by synovitis. He may state that he feels something slip in and out, merely giving him a sense of insecurity. However these symptoms may differ, the one constant fact should remain—namely, that the patient is always definitely clear that the sensation does not change from place to place. The various displacements are often said to be accompanied by a click.

There is no time to deal with the exceptional case which makes the surgery of the knee-joint so fascinating. It is often impossible to diagnose accurately without an operation. Among such abnormal cases I have found the external cartilage on the inner side of the knee, and I have found the fractured end of an internal cartilage lying on the outer side just internal to the external lateral ligament; also cartilages so split up that different segments of the same cartilage would become displaced at separate times, giving rise to distinctive symptoms. Frequently I have found two separate lesions, either of which would account for the symptoms, and unless both were rectified the operation might have failed. Sometimes fringes and lipomata and pedunculated semi-detached bodies have been present when I have expected a displaced cartilage, and I have sometimes even had to close my wound without having remedied any

defect. These confessions show that the knee is sometimes as secretive as the abdomen.

The symptoms are less acute in their primary onset in synovial fringes, the pain is quite local, and is not situated definitely in the internal lateral ligament. Creaking in the joint is common, and effusion almost invariably follows each nipping. There is usually in the recurrent case a thickening on each side of the ligament of the patella due to hypertrophy of the post-patellar pad of fat. One may expect to find synovial fringes attached to a post-patellar pad in cases of recurrent synovitis of the knee where the pad is found thickened and where occasional twinges occur in front of the joint. Loose bodies lock the knee sometimes, but usually only for a brief moment, and the symptoms, although sharp, are not acute. They can always be differentiated, because unless pedunculated they can be isolated in different parts of the joint, although they usually have a favourite resting place. They can generally be demonstrated by radiography. I have known lipomata to lock the knee, but the symptoms they produce are rarely acute. They are often accompanied by painless effusions, and can generally be felt in the pouches. An osteoma can usually be detected by careful examination. It can be felt and radiographed. It is the means of locking a joint when a muscle or tendon slips over it, but the locking is never accompanied by effusion. There is a type of knee which clicks on full extension, and wherever you place your finger the clicking seems immediately under it. This is sometimes due to a nodular condition of the anterior portion of the semilunar, but often it will be found associated with a slipping in and out of the external cartilage very clearly to be felt by placing the finger in the depression between the bones.

I refuse to operate upon any case which I see immediately after the first displacement, as so large a proportion of such cases get well under appropriate treatment, nor do I encourage operation in cases where the recurrent trouble is painless and is never followed by effusion in the joint. I strongly advocate operation where the recurrence is sometimes followed by acute symptoms and I encourage it in all recurrent cases where a strenuous athletic life is a means of livelihood or a physical necessity. Operation is a positive necessity in the case of men who work among moving machinery or stand in positions where a yielding knee may mean disaster. I have operated upon patients from 12 to 60 years; age, therefore, is not a contra-indication. An argument in favour of operation is the occurrence of tubercle and so-called rheumatoid trouble as a direct result of the irritation of a displaced cartilage. If I decide to operate I prefer to do so with the knee flexed to right angles, so that it need not be further flexed during the operation. I have a very real dread of accidental infection of a knee-joint, for it may mean the loss of limb. Further, I consider a knee which has been the seat of trauma as very susceptible to infection, and am therefore careful not to operate during the presence of effusion nor to move it during operation for fear of the ingress of air or dust. The most convenient way is to have the limb hanging in flexion over the end of the operating table. Some thicknesses of gauze, squeezed out of a solution of biniodide of mercury, are wrapped round the joint and the incision is made through the gauze, the cut edges of which are fixed into the wound. In this position it is not necessary, excepting in very stout people, to make the incision longer than an inch and a half. The incision I now employ is nearly transverse, commencing just behind the ligament of the patella, and traversing slightly above the tibial border, taking care to spare the internal lateral ligament from injury. Through this small opening a most excellent view can be obtained of the joint with the aid of retractors. The finger should never enter the joint. Neither the surgeon nor his assistant should touch the wound except with sterile instruments; the sutures for the capsule should be manipulated with forceps, the edges of the capsule being secured by a blanket stitch. The cartilage may be found in almost any conceivable position. It may be split along its inner margin; it may be fractured; it may be detached anteriorly; it may be turned inwards, like a bucket handle with its convexity inwards; it may be nodular; the posterior part may be in front; the anterior portion may be loose; it may be attached at its extremities and free along the whole part of its outer border; it may be firmly fixed with its inner border frayed and serrated; the anterior part may be ground away or found quite loose as a separate body; it may look quite normal, but its moorings found loose, or the posterior part may be split, which can only be discovered by detaching the anterior portion and drawing the cartilage towards the front of the joint. The examination should be gentle, and it is made easier by the use of a small blunt hook. It is only necessary to remove the loose portion of cartilage if the remainder be firmly attached. If it be decided not to remove the whole cartilage care should be taken to make the section without drawing upon the stump, otherwise it will be loosened and give rise to symptoms of recurrence. The capsule should not be closed until a search has been made for fringes, tabs, or other possible sources of derangement. I always apply a tourniquet and never tie a vessel nor drain the wound. Effusion, if it occurs, is usually very trivial if the operation has been done gently. As no structures of any importance to the stability of the joint have been severed, walking may commence in from 10 to 14 days, the joint being protected for another week. Loose bodies of whatever type should be removed. An endeavour should first be made to localise and fix them. This should be done immediately before the anæsthetic, when the patient's assistance can be obtained if necessary. The patient's hands should be sterilised and he should wear a mask and rubber gloves, and when found the fixed body should be placed in the keeping of a reliable assistant. The knee should be kept *extended* during this operation. These loose bodies are often found in connexion with rheumatoid arthritis, and should be removed whenever practicable, and this may involve splitting the patella longitudinally to obtain a good view of the interior of the joint. They are frequently found at the back of the joint and obstruct flexion and sometimes extension. They cannot be effectively removed by an anterior incision, and it will be necessary to approach the joint from behind. The narrow communication between the anterior and post portions of the joint prevents them from travelling if they should prove of any size, therefore their removal is not difficult. An incision is made through the popliteal space, the nerve and vessels being kept to the outer side, and usually the loose bodies can be felt through the capsule. This route

has also been described by my friends Brackett and Osgood.

[Mr. Jones concluded his interesting paper by exhibiting slides of the joint conditions of patients upon whom he had operated for obstructions due to the slipping of tendons or muscles over exostoses, and for fractures of the tibial spines, associated or not with rupture of the crucial ligaments, an injury which he also described.]

THE RESULTS OF OPERATION (LARYNGO-FISSURE) FOR INTRINSIC CANCER OF THE LARYNX.[1]

BY PROFESSOR E. SCHMIEGELOW.

SURGICAL treatment of intralaryngeal cancer gives exceedingly good results, especially when compared with those obtainable by surgical treatment of cancer in other internal organs. On examining this fact we find it to be due to the peculiar manner in which intrinsic cancer of the larynx originates and develops and spreads, as was originally pointed out by my friend Sir Felix Semon. It would be interesting historically to consider the development of the pathology, diagnosis, and treatment of intrinsic cancer of the larynx, but lack of time forbids me doing so. I may, however, be permitted to state here in London, speaking to an assembly of prominent American and English surgeons, that in my opinion the whole of our present knowledge of the diagnosis and treatment of this disease is founded on the works of Semon and Butlin, who, towards the end of last century, entirely revolutionised our views with regard to the malignancy of intralaryngeal cancer. Before their day the surgical treatment of this disease had always been regarded as almost hopeless, but Semon showed us that the chief reason of this was that the disease was always diagnosed too late, so that it was too far advanced to give any good operative result.

Having further learnt that intralaryngeal cancer in the great majority of cases appears as a primary cancer of the vocal cord, and therefore soon causes hoarseness, we have thus the means of recognising the disease at an early stage of its development, while still limited to the vocal cord, and so of a probable radical cure by removing the diseased vocal cord through a laryngo-fissure.

To illustrate the frequency of primary cancer of the vocal cord I wish to draw your attention to the following table of 66 cases of intralaryngeal cancer which have come under my observation (Table I.).

TABLE I.—*Primary Seat of Intralaryngeal Cancer.*

No specified localisation	18	cases.
Vocal cord	36	,,
Sinus Morgagni	2	,,
Arytenoid region	4	,,
Epiglottis	1	,,
Ventricular band	5	,,
	66	,,

In the first 18 cases the primary seat of the disease could not be localised, as the tumour had extended too far into the larynx when first observed. The table clearly shows that cancer of the interior of the larynx in by far the majority of cases originates as a growth of one vocal cord, generally in the central part of it, and that it can therefore be radically removed. If the disease, however, has extended to the anterior commissure the prognosis becomes more serious, as under these circumstances the thyrotomy cuts through the growth and may possibly be followed by a recurrence.

Those cancers of the larynx which do not primarily attack the vocal cords have, on the contrary, a bad prognosis; first, because they very often are not discovered and taken in hand until they have spread so far that there is no possibility of a radical cure by means of a laryngo-fissure; secondly, because these extra-cordal cancers are generally of a more soft medullary character, growing quickly and with greater tendency to involvement of the neighbouring lymphatic glands. The only exceptions to this are the pedunculated adeno-carcinomas which spring from the aryteno-epiglottic folds. Of these I have seen three cases which had a relatively good prognosis, and could be treated endolaryngeally with favourable results.

Having made the diagnosis by means of laryngoscopic inspection, supported by microscopic examination of a portion removed through the mouth, one has to remove the growth as soon as possible by means of a laryngo-fissure. This operation should be performed as indicated by Butlin and Semon, who, about 1890, inaugurated this treatment and proved that this comparatively safe operation was sufficient, if only performed early enough. I myself, chiefly following their instructions, have operated in the following manner.

The operation is always performed under general anæsthesia. I begin with morphium-ether and make a low tracheotomy. Hahn's tampon-cannula is introduced and the narcosis is continued with chloroform. The thyroid cartilage having been divided and the interior of the larynx opened, I fill the pharynx with sterilised gauze introduced from below through the split larynx in order to prevent the saliva from descending and interfering with the scene of action. According to Semon the larynx is packed with gauze soaked in a 10 per cent. solution of cocaine, to which I add a few drops of a 1 per mille solution of adrenalin in order to make the mucous membrane of the larynx anæsthetic and bloodless. Then the neoplasm, together with the whole diseased vocal cord, is removed by means of a knife and scissors. All the diseased area having been removed and the bleeding stopped, we formerly filled the larynx with a tampon of iodoform gauze, but after Butlin taught us to give up tamponading and to close the thyrotomy wound at once the results of operation have been much better. The patients are now able to swallow on the day of operation and can leave their bed a few days later. This, of course, is of the greatest importance in preventing complications in the lungs, especially in elderly people. My two eldest patients, respectively 71 and 74 years old at the time of operation, were able to leave their beds on the second day, and they are both alive and well now at the ages of 76 and 80 years respectively. Thyrotomy could only be performed in 33 of my cases treated up to 1912, as shown in the following table (Table II.):—

TABLE II.—*Results in 70 Cases of Cancer of Larynx (Extrinsic and Intrinsic).*

	Cases.	Cured.	Died or relapsed.
No treatment	10	0	10
Tracheotomy	8	0	8
Endolaryngeal removal	5	1	4
Thyrotomy	33	18	15
Subhyoid pharyngotomy	1	0	1
Partial resection of the larynx	4	0	4
Total resection	9	1	8
Totals	70	20	50

[1] A paper read before the Clinical Congress of Surgeons of North America, London, July 28th, 1914.

The result of these 33 thyrotomies was that 28 patients survived the operation, whilst 5 died from pneumonia, due chiefly to post-operative hæmorrhage. Amongst the 28 patients recurrence took place in 10 cases, whilst 18 patients are alive and well. These 18 had the carcinoma entirely limited to the vocal cord and the diagnosis was made at an early period of the disease—with only two exceptions. The first of these was a man, aged 44 years (see Table III., Case 11), who had a cancer of the posterior wall of the larynx, and whom I was able to follow for three years after the operation, when I lost sight of him. The second was a man, aged 28, suffering from an epithelioma of the left ventricular band, anterior commissure, and the anterior part of the right ventricular band. This patient I operated on 14 years ago; since then he has been on an expedition to the North Pole, and is still alive and well. The last 4 patients were operated on in 1912, and have therefore only been under observation for about two years since the operation. But they were all cases of quite limited epithelioma of the vocal cord and were operated on so early that there is not much chance of recurrence. The subject of Case 7, a man aged 61, was operated upon in 1905 for a cancer of the vocal cord. During the following seven years his larynx remained perfectly healthy, but he now has a quickly growing cancer in the throat requiring tracheotomy. Ought this to be considered as a recurrence or as an accidental cancerous infection of a larynx which has kept perfectly healthy for seven years after operation? Personally, I am inclined to look upon it as an accidental reinfection. In all the other cases of recurrence this took place within a year after the thyrotomy.

TABLE III.—*Eighteen Cases of Intrinsic Cancer of the Larynx Thyrotomised without Recurrence.*

Case.	Age.	Sex.	Date of operation.	Time of observation.	Remarks.
1	62	Male.	1892	18 years	Died in 1910 from cancer of rectum; larynx free.
2	28	,,	1900	14 ,,	Alive; no recurrence.
3	50	,,	1904	10 ,,	,, ,,
4	69	Female.	1904	10 ,,	,, ,,
5	71	Male.	1905	9 ,,	,, ,,
6	55	,,	1896	8 ,,	Died from cancer of stomach; no recurrence in larynx.
7	61	,,	1905	8 ,,	Alive.*
8	56	,,	1909	5 ,,	Alive; no recurrence.
9	47	,,	1905	4 ,,	Died from tuberculosis, 1909. Larynx free.
10	63	,,	1910	4 ,,	Alive; no recurrence.
11	44	,,	1896	3 ,,	Lost sight of.
12	55	Female.	1911	3 ,,	Alive; no recurrence.
13	38	Male.	1911	3 ,,	,, ,,
14	66	,,	1911	2½ ,,	No recurrence; died from some other disease.
15	58	,,	1912	2 ,,	Alive; no recurrence.
16	67	,,	1912	2 ,,	,, ,,
17	66	,,	1912	2 ,,	,, ,,
18	74	,,	1912	2 ,,	,, ,,

* Seven years after the operation cancer recurred in the larynx, probably new infection.

The functional result was exceedingly good in all cases. The voice was strong, generally sonorous, but in a few cases hoarse. The man aged 71 (Case 5) was operated upon in 1905. I saw him last in 1913; he was then 79 years old and had a strong, healthy voice. A clergyman, aged 75, who was operated upon in 1896, fulfilled his duties for eight years and preached every Sunday in two churches. The two men, aged respectively 66 and 67 years (Cases 14 and 16), who were operated upon in 1912 are able to make speeches to large assemblies with comparatively clear voice.

So as to get a broader basis of judgment as to the results of thyrotomy in case of intrinsic cancer of the larynx I have combined in the following table (Table IV.) my own experiences and those of F. Semon, Chiari, and StClair Thomson.

TABLE IV.—*Results of Operation by Laryngo-fissure.*

Operators.	No. of cases.	Cure over 3 years.	1–3 years.	Under 1 year.	Recurrence.	Death from operation.
Semon	24	15	4	1	3	1
Chiari	29	11	4	—	11	3
Schmiegelow	33	11	7	—	10	5
StClair Thomson ...	10	7	2*	—	1	0
Totals	96	44	17	1	25	9

* In one case secondary operation of removal of larynx was performed and the patient is now alive, five years later. In the second the patient died from other causes 15 months after laryngo-fissure.

It will be seen from the above that of 96 patients operated upon 63½ per cent. were cured for more than one year after the operation.

Copenhagen.

HYPERTHYROIDISM: PRIMARY AND LATE RESULTS OF OPERATION.[1]

BY C. H. MAYO, M.D.

THE term "hyperthyroidism" is so expressive of a group of symptoms, the symptom-complex of which has been seen and described under various names in all countries, that it is chosen as the title of this study. Through one hundred and fifty years the condition has been a topic of discussion by Morgagni,[2] Flajanni,[3] Parry,[4] Graves,[5] and Basedow,[6] and later under the term "exophthalmic goitre" by innumerable other observers.

The thyroid is a very necessary gland in the growth and development of body and brain, and must also be classified among both the glands of nutrition and the glands of defence. Like all the essential organs and kinetic glands of the body, it has a wide variation of its activity within the limits of health. Probably the secretion of one-sixth of the adult gland is enough to maintain the metabolic balance, which is no more surprising than that one half of one kidney will maintain urinary balance. A similar condition exists in many other organs of the body.

Many factors exist which control such organs in order that the balance of health may be maintained, yet any or all of them may be temporarily deficient or over-active in their functions, but unless there be an actual great loss of cells or a markedly

[1] A paper read before the Clinical Congress of Surgeons of North America, London, July 28th–30th, 1914.

[2] Morgagni: De sed. et causis morb., cap. xxi., art. 36; cap. xvii., art. 19; cap. xxiii., arts. 4 and 6.

[3] Flajani: Collezione d'Osservazioni e Reflessioni di Chirurgie, iii., 270–286.

[4] Parry: Collections from the Unpublished Medical Writings of the late Caleb Hillier Parry, London, 1825, vol. ii., p. 3; Elements of Pathology and Therapeutics, 1815.

[5] Graves: London Medical and Surgical Journal, May 23rd, 1835; Repr. System of Clinical Medicine, Dublin, 1843.

[6] Basedow: Casp. Woch. f. d. ges. Heilk, 1840, pp. 13, 14.

hyperplastic condition they are held in control. In this variation of activity in the normal thyroid and in the normal changes in activity of its various vesicles the thyroid sometimes manifests a storage function, retaining for a time its secretion and depositing colloid substance for this purpose. This almost brain-like intelligence of the glands, both duct and ductless, shows why so futile is the effort to transplant glands from other animals to the human, expecting that the gland will automatically functionate. Especially is this true of the reported cases of the transplantation of glands from animal to man, in which there is always a definite laking of the blood. A temporary benefit may be obtained, however, from the transplantation of the glands of internal secretion through the digestive power of the phagocytes.

That there should be a definite microscopic picture in so definite a disease as hyperthyroidism is to be expected. The only organ that gives such an exclusive picture is the thyroid. The trained pathologist should not only recognise the condition but also its degree of activity and its stages—that is, whether progressing, regressing, or regenerating.

The coincident pathology of the other essential organs, such as nephritis, fatty degeneration of the liver, myocarditis, and brown atrophy of the heart muscle, while characteristic of toxæmia, would not necessarily come from the toxic thyroid. The enlarged thymus is found in a majority of cases of hyperplastic thyroid, yet is not found in many of the most serious cases.

In the pathological examination the whole of the tissue removed must be macroscopically observed, so that an unessential small area of hyperplasia or of colloid storage be not chosen as the sole picture of the glandular histology. The changes in so small an amount of tissue may be neutralised by other factors. The pathological material from our cases has been studied by Wilson.[7] In his most recent paper he presents a comparative study of the thyroids from the three groups of cases which we recognise clinically (Plummer). They are summarised as shown in the accompanying table.

Discussion.—1. Practically all cases of clinically true exophthalmic goitre show marked primary hypertrophy and hyperplasia of the parenchyma of the thyroid. Furthermore, the clinical stage of development of the disease is paralleled by the stage of development of the pathological condition in sufficiently marked degree that one may estimate the clinical condition from the pathological examination with about 80 per cent. of accuracy. The degree of severity of the clinical condition is similarly paralleled by the pathological condition of the gland. The relationship between hypertrophy and hyperplasia of the thyroid and the clinical symptoms of true exophthalmic goitre is remarkably constant.

2. While mild degrees of hypertrophy and hyperplasia within physiological limits may be present in the gland, particularly in the young and during pregnancy, yet the absence of this condition in the thyroids of adults coming to operation for toxic non-exophthalmic and non-toxic goitres is most striking. Without making any allowance for either clinical or pathological errors of diagnosis, less than 1 per cent. of all cases coming to operation for goitre show any considerable primary hypertrophy and hyperplasia of the parenchyma of the thyroid except as associated with clinical symptoms of true exophthalmic goitre.

3. The pathology of atoxic simple goitre is marked essentially by atrophic parenchyma, decreased function and decreased absorption. The process is a chronic one.

4. The pathology of toxic non-hyperplastic goitre of Plummer's clinical group 2 (that is, those resembling exophthalmic goitre) is one of increased parenchyma through regenerative processes in atrophic parenchyma or the formation of new parenchyma of the fœtal type with an increase in each instance of secretory activity and of absorption. The process is a chronic one, but sufficiently active to cause the patient to consult a surgeon earlier than do those in clinical group 1.

5. The nearer the cases of clinical group 2 (toxic non-hyperplastic) approach, in age and symptoms, true exophthalmic goitre, the shorter the duration of the period of goitre before operation and the smaller the average weight of the gland at the time of its removal.

6. The cases of toxic goitre of clinical group 1 (that is, those in which the symptoms are of the cardio-vascular variety) much more closely resemble cases of simpler goitre in their pathology in all respects than do the cases of clinical group 2. A larger number of them are of the colloid goitre type; the enlargement of the thyroid has existed for a longer period before operation and the portion of the gland removed is materially larger than in those cases of clinical group 2.

7. Finally, it may be stated that all the above pathological evidence points to a constant relative association of increased secretion and increased absorption from the thyroid proportional to the degree of toxicity on the part of the patient. We have as yet no absolute proof that such secretion and absorption is the cause of, rather than coördinate with, the symptoms, but the presented evidence strongly points to that conclusion.

What causes an over-activity of the thyroid? It is possible that the condition may arise from extra demands made upon the gland in its capacity for nutrition or defence in toxic conditions. Possibly in its latent sex relationship such demands may be temporary or long continued. For a time the excess secretion may be neutralised. When shock is attributed as the cause of the sudden onset of hyperthyroidism, it is often only an evidence that the equilibrium of the nervous system has been upset in the presence of a latent hyperplastic thyroid, thus producing the sudden symptoms which had previously been controlled or neutralised.

Up to June 15th, 1914, 6868 operations had been performed for goitre in our clinic. Of these, 3295 were performed upon patients with hyperthyroidism. The greater number of these patients have been seen clinically by Plummer.[8] His observations on the symptoms are as follows:—

The cases were classified clinically as hyperplastic toxic, hyperplastic atoxic, non-hyperplastic toxic, and non hyperplastic atoxic.

Patients coming under observation with non-hyperplastic toxic goitre gave a history of having first noted the goitre at the average age of 22 years, and the evidence of intoxication at the average of 36·5 years. The corresponding ages for hyperplastic goitre were respectively 32 and 32·9 years.

That non-hyperplastic goitre was noted 10 years earlier in life than hyperplastic goitre, that 14·5 years elapsed between the appearance of non-hyperplastic goitre and the development of notable toxic symptoms, and that the constitutional

TABLE SETTING FORTH A COMPARISON OF PATHOLOGICAL GROUPING OF THYROIDS FROM CASES OF TOXIC HYPERPLASTIC, TOXIC NON-HYPERPLASTIC, AND ATOXIC (SIMPLE) GOITRE

[7] Wilson: Journal of the American Medical Association, Jan. 10th, 1914, vol. lxii., p. 111; American Journal of the Medical Sciences, December, 1908, pp. 851–861; ibid., March, 1914, vol. cxlvii., No. 3, p. 344.

[8] Plummer: American Journal of the Medical Sciences, December, 1913, No. 6, vol. cxlvi., p. 790; Journal of the American Medical Association, August 30th, 1913, vol. lxi., p. 650.

TABLE SETTING FORTH A COMPARISON OF PATHOLOGICAL GROUPING OF THYROIDS FROM CASES OF TOXIC HYPERPLASTIC, TOXIC NON-HYPERPLASTIC, AND ATOXIC (SIMPLE) GOITRE.

	Percentage distribution.				Average age at operation.				Average duration of goitre before operation.				Average weight of portion of gland removed.			
	Exoph. goitre. "Exoph. list," 1911–12. 431 cases.	Toxic goitre clinical, Group 2. "Exoph. list," 1910–12. 129 cases.	Toxic goitre clinical, Group 1. + "Simple list," 1911–12. 155 cases. 374 cases.	Toxic goitre clinical, Group 1. ? "Simple list," 1912. 90 cases.	Atoxic (simple) goitres "Simple list," 1912. 373 cases.	Exoph. goitre. "Exoph. list," 1911–12. 431 cases.	Toxic goitre clinical, Group 2. "Exoph. list," 1910–12. 129 cases.	Toxic goitre clinical, Group 1. + "Simple list," 1911–12. 155 cases. 374 cases.	Toxic goitre clinical, Group 1. ? "Simple list," 1912. 90 cases.	Atoxic (simple) goitres. "Simple list," 1912. 373 cases.	Exoph. goitre. "Exoph. list," 1911–12. 431 cases.	Toxic goitre clinical, Group 2. "Exoph. list," 1910–12. 129 cases.	Toxic goitre clinical, Group 1. + "Simple list," 1911–12. 155 cases. 374 cases.	Toxic goitre clinical, Group 1. ? "Simple list," 1912. 90 cases.	Atoxic (simple) goitres "Simple list," 1912. 373 cases.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Years.	Years.	Years.	Years.	Years.	Years.	Years.	Years.	Grams.	Grams.	Grams.	Grams.
A Early primary parenchymatous hyperplasia	4·0	—	—	—	—	25·0	—	—	—	—	0·3	—	—	38	—	—	—
B Advanced primary parenchymatous hyperplasia	43·0	—	—	—	—	31·7	—	—	—	—	0·9	—	—	61	—	—	—
C Regressing primary parenchymatous hyperplasia	52·5	—	—	—	—	40·7	—	—	—	—	3·5	—	—	51	—	—	—
Average of total parenchymatous hyperplasia	99·5	—	—	—	0·5	35·9	—	—	—	—	2·3	—	—	55	—	—	—
D Secondary regeneration of atrophic parenchyma of "colloid" goitre ...	—	50	17	9	9·0	—	34·0	32·0	38·0	31·0	—	6·9	15·3	8·0	9·6	—	67·0	100	153	143·0
E Fœtal adenomas... ...	—	12	7	10	5·0	—	39·0	47·0	39·0	38·0	—	4·4	5·8	13·6	12·5	—	66·0	97	139	122·0
F Degenerating fœtal adenomas	—	33	14	18	18·0	—	43·0	50·0	46·0	40·0	—	12·6	22·7	24·2	13·1	—	91·0	186	190	129·0
Average of total fœtal adenomas	—	45	21	28	23·0	—	41·0	46·9	44·7	39·7	—	8·8	18·0	20·5	13·0	—	83·7	162	172	127·5
G Adult "colloid" adenomas	—	3	21	19	23·0	—	45·0	44·0	43·0	39·0	—	17·7	15·2	14·5	14·3	—	139·0	184	206	147·0
H Atrophic parenchyma ("colloid") thyroids, adenomatoses, &c.	—	2	41	44	44·0	—	52·0	46·0	41·0	37·0	—	12·0	20·2	16·5	14·5	—	140·0	196	188	164·0
Average of total colloid goitres, adult, parenchyma	—	5	62	63	67·0	—	47·5	45·0	41·6	37·5	—	14·0	18·7	16·0	14·4	—	139·0	192	193	159·0

symptoms were noted but a few months later than the goitre in the patients affected with hyperplastic thyroid, was alone sufficient to show that we were dealing with at least two distinct pathological and clinical groups. That one was not the sequence of the other was self-evident.

We may safely come to the conclusion that exophthalmic goitre is a definite clinical complex always associated with hyperplasia of the thyroid, and that it should be sharply distinguished from the constitutional state or states that may develop with non-hyperplastic goitre.

Let us note the parallelism of thyrotoxicosis and alcoholism and assume that there are three toxic elements in the thyroid secretions, one damaging chiefly the nervous system, one the circulatory system, and the other producing exophthalmos. In exophthalmic goitre all three elements are in excess, but the clinical picture is dominated by a nerve toxin, although in individual cases the circulatory toxin or element producing exophthalmos may seem to be in excess.

The intoxications from non-hyperplastic goitre may be divided into two merging groups: (1) a group in which the cardiac toxin predominates, in which the clinical picture closely resembles, and in many instances cannot be differentiated from the cardio-vascular complex resulting from alcoholic, luetic, septic, and other well-known toxins; and (2) a group more closely approaching the picture of Graves's disease, and including the cases that have been erroneously so diagnosed by many of the profession. [In this group are those cases in which there is degeneration of encapsulated adenomata. While they do not have exophthalmos, in lieu of this they may have the staring and widening of the palpebral fissure. The pulse is irregular in tension and rhythm. Circulatory changes and muscular weakness are marked. Many of them have been treated for hyperthyroidism and some of them rendered worse by the further degeneration of the gland which has been induced by cytolytic serums.]

The average lapse of time between the appearance of non-hyperplastic goitre and toxic symptoms is 14·3 years. That the patient comes under observation three years later indicates that the onset is usually insidious. Nervousness, tremor, loss of strength and weight, as a rule, develop slowly, but may appear suddenly long before definite evidence of myocardial damage. The administration of iodin may cause the sudden appearance of those symptoms with myocardial insufficiency much as they might follow the prolonged drinking bout of an old toper who had not previously shown decided evidence of chronic alcoholism. In some cases the clinical aspect, as noted above, closely approaches that of exophthalmic goitre. However, the symptoms are less complex, less definitely associated, and except for a damaged heart less intense. There is much evidence to suggest that during the 14·5 years previous to the onset of definite toxic symptoms many of the cases of non-hyperplastic thyroid may be compared to the alcoholic tippler in that if the soil is right they develop arteriosclerosis, in many cases showing the combined picture of thyrotoxicosis and arteriosclerosis.

The development of a typical syndrome of Graves's disease in a case having a definite history of simple goitre means that a hyperplastic goitre has been superimposed upon the simple type.

The onset of exophthalmic goitre is, as a rule, relatively acute and the course of the disease fairly definite. The clinical picture early in the history is that of a toxin acting directly on the more vital organs, more notably on the central nervous and vascular system. Later it is made more complex by the interaction of those organs whose functions have been directly disturbed by the toxin. The order of onset of the most important symptoms based on the average of our series is as follows: (1) cerebral stimulation, (2) vasomotor disturbances of the skin, (3) tremor, (4) mental irritability, (5) tachycardia, (6) loss of strength, (7) cardiac insufficiency, (8) exophthalmos, (9) diarrhœa, (10) vomiting, (11) mental depression, (12) jaundice, and (13) death.

If the average course of the intoxication be represented by a curve the greatest height is reached during the latter half of the first year, and then suddenly drops to the twelfth month. In many instances it reaches the normal base-line during the next six months. More often it fluctuates with periods of exacerbation for the next two to four years. Secondary symptoms and exophthalmos may remain, but the active course only rarely continues over four years without distinct intermissions. Compare the striking resemblance of the character, order of onset, and course of this train of symptoms with that resulting from the heavy use of alcohol by a susceptible individual over a corresponding period of time. Near the crest of the curve any shock, operation, &c., that treats the patient to another drink may result in tremens or death.

In the average course after the first year the symptoms that may be attributed to long-continued intoxication rather than to a high degree of acute intoxication—that is, those from the more chronic types of heart, liver, and degeneration of the kidney—enter strikingly into the clinical picture. In attempting to construct a composite curve we find that the curves for those symptoms that we can readily attribute to a high degree of immediate intoxication from the thyroid drop, while the curves for those findings attributable to a long-continued intoxication of a lower degree gradually rise.

The various types of goitre should be treated both medically and surgically. Many goitres of the simple and mild exophthalmic type undoubtedly regress spontaneously, although various forms of medical treatment may hasten the recovery and restoration of the gland to an apparently normal condition in many instances, especially in the early stages of simple goitre.

Exophthalmic goitre is essentially a disease of a chronic character, presenting exacerbations and ameliorations of symptoms extending over a period of months or several years. After the first year the gland often undergoes a regression.

While this disease is amenable to surgical treatment by the removal of a large amount of the hypersecreting gland, it is by no means urgent surgery, and all patients, during periods of exacerbation, should be considered as medical cases. Surgery is indicated in the upwave of improvement. The majority of these cases can withstand thyroidectomy at the time they are seen by the surgeon. Extreme conditions, especially dilatation of the heart, may require medical preparation, and the operative interference following in cases resistent to treatment should be confined to injections of boiling water into the gland after Porter's[9] plan to hasten improvement. In most of the severe cases a ligation is made first of the left upper pole only. Should the reaction following this be severe the ligation of the right upper pole is indicated a week later, and thyroidectomy reserved until four months have elapsed, by which time these patients have made an average gain of 22 pounds, with great general improvement. However, if the reaction following the left ligation is not unduly severe, a partial thyroidectomy may be made at the second operation, the week following.

Ligation.—The ligation of vessels as an operative procedure was performed in the early part of the nineteenth century and later revived by Wölfler. The ligation of the superior thyroid arteries is made through a transverse incision over the centre of the thyroid cartilage. The incision is made through the skin and platysma muscles. Blunt dissection with spreading probe-pointed scissors exposes the inner border of the sterno-mastoid muscle, which is drawn outward. The anterior belly of the omohyoid muscle is next exposed, elevated, and drawn inward, which brings into view the upper pole of the thyroid with its vessels. A permanent ligature is passed around these veins and arteries, close to the gland or even including its tip. This prevents reversal of circulation by vessel-anastomosis, which occurs from high ligation of the artery. Injury to the nerve is not feared, as here the incision is made between

[9] Porter: Journal of the American Medical Association, 1913, vol. lxi., p. 88.

the superior and inferior laryngeal nerves and the gland is easily approached. No drainage is necessary. According to the purpose of the operation, and to the condition of the patient, one or both sides may be ligated at the same time.

Ligation of the inferior thyroid artery is made through a lower transverse incision between the insertions of the sternomastoid, and requires elevation of the lobe of the thyroid and exposure of the vessel at the point the ligature is applied, so that nerve-tissue may not be included. This operation is usually done only for those patients suffering from a severe relapse after a partial thyroidectomy. Operating thus in stages may be advisable in certain cases, especially of exophthalmic goitre. For example, the upper left pole may be ligated under novocain. Should severe reaction ensue, a few days later the right ligation is made from which there is less reaction. If the primary operation has been made without marked bad effect upon the patient the secondary operation of thyroidectomy can be done in about a week. In the cases in which only double ligation has been done at an earlier period the larger part of the gland may be removed at the end of four months. By this time the patients who have been under weight will have gained an average of 22 pounds, and the thyroidectomy can be made with safety.

Sympathectomy.—The Jaboulay operation is a cervical sympathectomy of the superior and sometimes of the middle ganglia and is employed in those cases in which the exophthalmos is marked, nervous symptoms are active, and the gland small. In such cases the superior thyroid vessels are often ligated in the same incision. This operation can be done with novocain as a local anæsthetic, but is preferably made with a general or combined anæsthetic. Incisions are made in the lines of the natural creases in the neck opposite the bifurcation of the carotid. The sternomastoid is drawn outward and a blunt dissection is made down to the jugular and carotid veins which are then drawn inward. The posterior sheath of fascia enclosing these vessels is opened that the vagus nerve may be kept under observation, since this nerve is bulbous above this point and might be confused with the sympathetic.

Under normal conditions the sympathetic ganglion is one-eighth to one-fourth of an inch wide. Many branches lead from it on either side. The connecting branches are divided, the upper part of the ganglion torn off or cut, and the lower portions of the nerve torn or cut off at the middle ganglion unless the middle ganglion is also removed.

Thyroidectomy.—The angular or bayonet incision is made for the removal of high-lying goitres which have developed in the upper pole of the gland. The best general exposure of the thyroid is through a low collar incision, commonly known as the Kocher incision, which includes the skin and platysma and extends laterally to the external jugulars. The skin with platysma is dissected upward, also downward, uncovering the sternohyoid muscles. These are separated by a vertical incision, which includes the fibrous capsule over the gland. Lateral traction, separating the two sternohyoid and also the sternothyroid beneath them, exposes the thyroid gland sufficiently and gives enough room for the removal of small goitres. However, in large and exophthalmic goitres it is necessary to divide the sternohyoid muscle in the upper part of the field over the thyroid cartilage. This is important, since when reunited it preserves the nerve supply and breaks the line of closure of skin and muscle, preventing a muscle-drawn scar which moves with deglutition. The sternohyoid can usually be retracted, but should be divided if it limits the working field. Many of the troubles and accidents in the surgery of goitre would be avoided if the preliminary exposure of the thyroid were adequate before proceeding with the gland itself.

The lateral veins are caught and divided between clamps. The gland is gently elevated with the hand, and under slight tension the vessels at the upper pole are caught and divided between two forceps. This is repeated on the anastomosing vessels close to the isthmus. The vessels at the lower pole are treated in the same manner, the gland being held in the hands of an assistant, who keeps up continual traction, gradually elevating and turning with the isthmus across the trachea, where the separation is made along the opposite lateral lobe. Few forceps are required in simple goitres, while the papillary and exophthalmic forms require many. However, in the excision of an exophthalmic goitre one must keep close to the gland, and it is well to divide the capsule along the lateral border, which is caught in many clamps and the gland more carefully enucleated, saving this capsule, which effectually protects the recurrent laryngeal nerves and also the parathyroids.

The anæsthetic of choice in most cases is ether. Complicated cases, however, may be best carried through the operation by the local use of 0·5 per cent. novocain solution, with the addition of a little adrenalin. Occasionally the combined use of a local with a general anæsthetic is advisable, a method which Crile has done much to popularise; the local anæsthetic relieving the pain necessitates less of the general anæsthetic to secure sleep.

In severe forms of Graves's disease the use of 1/200 grain of scopolamine with 1/6 grain of morphine one hour previous to operation is often a distinct advantage. Some patients seem to have an idiosyncrasy to the drug, and in such cases the operation must be postponed 24 hours to permit elimination. In all cases in which ether is used as the general anæsthetic 1/100 grain of atropin should be given half an hour before operation to maintain a dry trachea and pharynx during the operative procedure.

Mortality.—The great lowering of mortality following operation for exophthalmic goitre is due less to trivial details of technique than to the better judgment in the preparation of patients, the selection of a time, type, and extent of operation, and its division into stages, with varying intervals of rest. The high mortality of the past is no longer a determining factor against the surgical treatment. As many as 278 consecutive operations have been made on the thyroid between deaths occurring from the operation. The average operative mortality at present probably varies from 1 to 3 per cent. Relapse of some degree occurs in a small percentage of cases through the removal of too small an amount of the thyroid. Such cases should be reoperated upon.

The following is the report of a few interesting cases ranging from one to several years since operation.

Case 1 (95443).—Male, married, aged 29. Examined Nov. 13th, 1913. History: Onset of symptoms five months prior to examination—i.e., nervousness, tachycardia, exophthalmos, and loss of strength. Goitre had been noted for 15 months. Six weeks prior to examination tremor, dyspnœa, insomnia, and sweating developed. Symptoms steadily increasing. Loss of weight 12 lb.

Examination: Marked evidence of all the preceding symptoms; definite exophthalmos, bruits in superior thyroid vessels, dilated heart, pulse 110. Operation: Ligation of left superior thyroid vessels Nov. 20th, 1913, followed by thyroidectomy seven days later. Feb. 10th, 1914: Patient reported great improvement; had gained 20 lb. in weight, pulse 80, exophthalmos less marked, nervousness greatly reduced.

Case 2 (*94464*).—Male, married, aged 41. Examined Oct. 27th, 1913. History: Acute articular rheumatism five times. Ten months prior to examination the patient became nervous, with tremor, dyspnœa, palpitation, tachycardia, and loss of strength. Eight months later goitre and exophthalmos were noted. Examination: Marked exophthalmos; 40 lb. loss in weight; bruits in superior thyroid arteries. Operation: Thyroidectomy on Nov. 3rd, 1913. Feb. 10th, 1914: Patient reported himself cured; a gain of 25 lb. in weight, pulse 72, exophthalmos greatly improved, only slight nervousness.

Case 3 (*94372*).—Female, single, aged 20, height 5 ft. 6 in. Examined Oct. 25th, 1913. History: Nervousness, tremor, dyspnœa, palpitation, tachycardia, loss of strength, sweating, and prominence of the eyes for one year. Ten months previously there was an attack of vomiting and diarrhœa, following which the patient was in bed for four months and lost 50 lb. in weight. She then improved until one month before examination when she began vomiting and exhibited evidence of increased intoxication. Examination: Definite exophthalmos, marked thrills and bruits in the superior thyroid vessels, pulse 130. Operation: On Nov. 3rd and 10th, 1913, the thyroid vessels were ligated. Feb. 10th, 1914: The patient reported steady gain in strength, increase in weight of 10 lb., and general improvement.

Case 4 (*94806*).—Female, married, aged 26, height 5 ft. 8 in. Examined Nov. 2nd, 1913. History: No children, goitre for six years. All the features of nervousness, tremor, palpitation, tachycardia, loss of strength, diarrhœa, exophthalmos, and extreme intoxication existed during the first year. Since then symptoms fluctuating but never returning to normal. She was able to do some housework. Examination: First degree of exophthalmos, thrills and bruits in both thyroid vessels. The pulse was 150; heart dilated; she had lost 23 lb. in weight. Operation: Thyroidectomy on Nov. 7th, 1913. On Feb. 13th, 1914, the patient was reported "almost well"; pulse 78; a gain in weight of 11 lb.

Case 5 (*78726*).—Female, single, aged 20. Examined Jan. 18th, 1913. History: Five months previously to examination she developed symptoms of goitre; nervousness, dyspnœa, aplpitation, tachycardia, vomiting, diarrhœa, insomnia, sweating, and exophthalmos. Symptoms steadily progressive. Examination: Acute intoxication, definite Stellwag, marked thrills and bruits in the superior thyroid vessels, heart dilated, pulse 120. Operation: Jan. 27th, 1913, ligation of the left superior thyroid vessels; Feb. 1st, 1913, thyroidectomy. On Feb. 10th, 1914, the patient was reported cured. There had been a gain of 35 lb. in weight, eyes were normal, pulse 85, and very little nervousness.

Case 6 (*77188*).—Female, married, aged 27. Examined Dec. 10th, 1912. History: No children, always well, goitre for 10 years. For the past two years she had noted enlargement of goitre and had developed nervousness, tremor, dyspnœa, palpitation, tachycardia, loss of strength, insomnia, sweating, and exophthalmos. Steady increase in severity of symptoms. Examination: Pulse 130, definite exophthalmos, thrills and bruits in superior thyroid vessels, cardiac dilatation and other evidences of acute intoxication. Operation: On Dec. 17th and 24th, 1912, the superior thyroid vessels were ligated. On Feb. 22nd, 1913, patient returned for thyroidectomy. On Feb. 10th, 1914, a report of great improvement was obtained; 35 lb. gain in weight, pulse 76, eyes nearly normal. Able to do customary work.

Case 7 (*76360*).—Female, married, aged 42. Examined Nov. 20th, 1912. History: One child 1 year old. Goitre developed following childbirth. Symptoms: nervousness, tremor, dyspnœa, palpitation, loss of strength, sweating, and exophthalmos. Acute condition lasted three months. After that slow improvement of symptoms. Examination: Definite exophthalmos, thrills and bruits in superior thyroid vessels, slight cardiac dilatation, pulse 116, 40 lb. loss in weight. Operation: Thyroidectomy Jan. 8th, 1913. On Feb. 10th, 1914, patient reported great improvement, 30 lb. gain in weight, pulse 80, eyes nearly normal. She is doing her customary work.

Case 8 (*71815*).—Female, single, aged 47, height 5 ft. 2 in. Examined August 8th, 1912. History: Fifteen months ago pulse 150, tremor, nervousness, loss of weight, vomited a few times. Patient in bed one month. Entire attack lasted three months, very severe. Taught school all last year but did not regain weight or strength entirely; tremor remained. In the past month symptoms returned with loss of weight from 135 lb. to 110 lb., nervous and weak; not confined to bed, but has been up and down. Examination: Showed first degree of exophthalmos, pulse 110 to 120, left heart slightly dilated. Operation: August 22nd, 1912, ligation of left superior thyroid artery; 28th, ligation of right superior thyroid. On May 18th, 1914, patient reported herself strong, able to work, not nervous or excitable, and weighing 150 lb.

Case 9 (*A67678*).—Female, married, aged 37, height 5 ft. 2 in. Examined May 10th, 1912. Three children, youngest 6 months old. History: Noticed small lump right side of neck for 10 years; no symptoms until three months ago, when she developed a rapid heart action, fatigue, nervousness, and loss of weight. One month ago vomited everything swallowed from 7 to 10 days. Severe diarrhœa for three days six weeks ago. Goitre has grown very rapidly since February. Average weight 125 lb.; weighed 88 lb. three weeks ago. Irritating cough with expectoration. Examination: Showed second degree of exophthalmos, thrills, and bruits in both superior thyroid vessels. Pulse 156. Present weight 80 lb. Operation: May 22nd, 1912, ligation of both superior thyroid arteries. On May 11th, 1914, patient reported herself much improved in general health and strength; tremor almost disappeared, pulse-rate 70 to 80. Present weight 127 lb.

Case 10 (*25095*).—Female, married, aged 28. Examined June 21st, 1909. History: Three months prior to examination patient developed hyperthyroidism, nervousness, protrusion of eyes, cardiac dilatation; pulse 140, 25 lb. loss in weight. Symptoms repeatedly progressing. Examination: Definite exophthalmos, bruits in thyroid vessels. Operation: June 24th, 1909, thyroidectomy. On Feb. 10th, 1914, patient reported herself cured; had gained 50 lb. in weight, eyes improved, pulse 84, doing customary work.

Case 11 (*22288*).—Female, married, aged 26. Examined April 8th, 1909. History: One child, aged 6 years. Six months previously to examination goitre was noted with symptoms of nervousness, tremor, exophthalmos, tachycardia, dyspnœa, steadily progressing. Examination: Exophthalmos, marked bruits in superior thyroid vessels, pulse 130, 20 lb. loss in weight. Operation: April 14th, 1909, ligation; Oct. 4th, 1909, thyroidectomy. On Feb. 10th, 1914, patient had greatly improved; 20 lb. gain in weight, pulse 90, doing customary work.

Case 12 (*20797*).—Male, single, aged 40. Examined March 2nd, 1909. History: Exophthalmos developed three years prior to examination. Two years later symptoms appeared of nervousness, cardiac dilatation; 20 lb. loss in weight. Goitre not noticed. Examination: Pulse 120, definite goitre, and marked intoxication. Operation: March 6th, 1909, thyroidectomy. On Feb. 10th, 1914, the patient was reported as being entirely well and doing more than the usual amount of work. Pulse normal, eyes improved, 40 lb. gain in weight.

Case 13 (*19390*).—Female, married, aged 53. Examined Jan. 23rd, 1909. History: No children. In 1906, patient developed nervousness, tremor, tachycardia, palpitation, dyspnœa, œdema, diarrhœa, and loss of strength. One year prior to examination exophthalmos appeared; six months later goitre. Symptoms severe during first year, fluctuating since then. Examination: Marked Stellwag, arrhythmia, pulse about 100. Operation: Jan. 23rd, 1909, thyroidectomy. On Feb. 10th, 1914, patient greatly improved and doing customary work. Pulse 80, eyes improved, gain in weight.

Case 14 (*18484*).—Female, married, aged 20. Examined Dec. 19th, 1908. History: Marked exophthalmos in 1904. One year later goitre, nervousness, tremor, and dyspnœa; symptoms gradually progressing. Examination: Marked exophthalmos, cardiac dilatation, pulse 120, acute intoxication. Operation: Jan. 7th, 1909, thyroidectomy.

On Feb. 10th, 1914, the report stated that there was great improvement; gain in weight 25 lb., pulse 82, eyes improved. Doing her customary work.

Case 15 (*G5228*).—Male, aged 47. Examined August 25th, 1905. History: Mild attack eight years prior to examination. Seven years later goitre was noted, with nervousness, exophthalmos, and pulse 140. Symptoms most severe the past four months. Examination: Typical exophthalmic goitre. Operation: August 28th, 1905, thyroidectomy. On Feb. 10th, 1914, the patient reported that he was cured. He had gained 40 lb. in weight; eyes, heart, and pulse normal; no nervousness.

Case 16 (*G4784½*).—Male, aged 30. Examined May 15th, 1905. History: Patient had had symptoms of tachycardia, nervousness, and tremor for a year and a half. About eight months prior to examination exophthalmos and goitre were noted. Symptoms steadily progressive. Examination: Definite exophthalmos, enlarged thyroid, pulse 130. Operation: May 16th, 1905, thyroidectomy. On Feb. 10th, 1914, the patient was reported to be cured; 38 lb. in gain in weight, pulse and heart normal, eyes moderate.

Case 17 (*P2617*).—Female, married, aged 44. Examined May 11th, 1905. History: One child 16 years of age; goitre of several years' duration, increased during past year with nervousness, protrusion of eyes, palpitation, and tremor. Examination: Firm thyroid, heart dilated, pulse 120. Operation: May 13th, 1905, thyroidectomy. Feb. 10th, 1914, patient cured; gain of 35 lb. in weight; pulse and heart normal; eyes greatly improved. She is doing her usual amount of work.

Case 18 (*P1657*).—Female, married, aged 30. Examined June 11th, 1904. History: One child 7 years of age; goitre, exophthalmos, tachycardia, and tremor for two years. Examination: Moderate exophthalmos, slight tremor, pulse 100. Operation: June 15th, 1904, thyroidectomy. On Feb. 10th, 1914, the patient was reported to be cured; pulse and heart normal, eyes normal, no nervousness, and gain of 20 lb. in weight.

It may be well to note here the effect of pregnancy during the progress of the disease or following the operation. A few of these patients are in much better health during pregnancy; however, in the majority the symptoms are worse. I believe that the risk to life incident to pregnancy and labour is less than from abortion, which rarely should be produced, since most of these patients improve after childbirth.

Rochester, Minnesota.

TYPHOID PERFORATION.[1]

BY GEORGE E. ARMSTRONG, M.D.

IN the two provinces of Quebec and Ontario in Canada there were during the five years 1908–1912 inclusive 6011 deaths from typhoid fever, an average of 1202 deaths per annum. In the province of Alberta during the five years 1909–1913 inclusive there were 852 deaths from typhoid fever, an average of 170 per annum. In the United States of America during the four years 1909–1912 inclusive there were 45,833 deaths from typhoid fever, an average of 11,458 deaths per annum. The average death-rate was a little over 20 per 100,000 of population.

The responsibility for this enormous waste of human lives cannot be laid at the door of the medical profession. It is a reflection upon the humanitarianism and business acumen of the laity in these countries. Those who succumb to typhoid are among the most promising in the country. The greatest susceptibility is from 15 to 25 years of age. It has again and again been proved to a demonstration that pure water and efficient drainage prevent typhoid. Typhoid can be arrested by an Act of Parliament and by municipal legislation. Regarded as a purely economic question the money spent in removing the causes of typhoid would earn larger dividends than if invested in the best bonds in the world. Why should not municipalities, towns, and cities be made as responsible financially for the loss of time and loss of life from a preventable disease like typhoid, as are the transportation companies by land and water made responsible for preventable accidents.

Typhoid is still with us, however, and it is still attended by a mortality from several complications, 75 per cent. of which are surgical. It is to one of the most important of the latter that I would ask your attention. One cannot approach the subject of surgical complications of typhoid without an appreciation of the influence of W. W. Keen, who brought this subject so clearly and forcibly before the profession in his book published in 1898.

The incidence of perforation varies in different years and in different epidemics. In Germany perforation is less common than in America. Recent figures embracing 9713 cases collected in England, Canada, and the United States show that more than one-third of the deaths from typhoid are due to perforation. At Johns Hopkins Hospital there were 43 perforations in 1500 cases, or 1 in 38. In the Pennsylvania Hospital there were 50 perforations in 1948 cases, or 1 in 39. In the Royal Victoria Hospital, Montreal, there were 83 intestinal perforations in 2917 cases, or 1 in 35, and 2 perforations of the gall-bladder. In the Montreal General Hospital there were 110 perforations in 2494 cases, or 1 in 22½. In the Royal Victoria and Montreal General Hospitals it is sometimes quite impossible to admit all the cases of typhoid that apply. Only the more severe cases are taken in. Again, quite a number of cases are admitted after perforation has occurred. In 15,224 collected cases there were 544 perforations, or about 1 in 31½. Statistics show perforation to be more common in men than in women. The reason is not obvious. In children perforation is rarer than in adults.

Pathogenesis.—Chomel remarks that "the accident is sometimes the result of ulceration, sometimes of a true eschar, and sometimes it is produced by the distension of the intestine, causing the rupture of the tissue weakened by disease." In a specimen in the McGill museum there are 10 perforations in the ascending colon and sigmoid, probably from distension. I have usually found the perforation near the base of a generally well-defined ulcer. In size it varies from a very small pin-point hole to an opening of the size of a lead pencil. Only rarely is it larger. It is always situated nearly directly opposite the mesenteric attachment.

While it is true that the perforation may occur at any point in the stomach, the small or large intestine, or in the appendix vermiformis, yet, fortunately for the patient and the surgeon, it is found somewhere in the terminal 2 feet of the ileum in an overwhelming majority of cases.

Prognosis.—That a typhoid perforation not closed by the surgeon is always a fatal complication is as a rule a true statement. The only exceptions are those in which a perforation of the large bowel occurs between the layers of its mesenteric attachment. When this occurs an abscess develops extraperitoneally, and may subsequently be opened. In the single case in my series in which this occurred the fistula gradually healed. It is probable

[1] A paper read before the Clinical Congress of Surgeons of North America, London, July 29th, 1914.

that all cases in which a perforation of the small intestine occurs into the peritoneal cavity prove fatal unless recognised and the opening closed. The duration of life after perforation in 134 cases collected by Fitz was as follows:—

Died on the first day	37·3	per cent.
,, ,, second day	29·5	,,
,, in the first week	83·4	,,
,, ,, second week	9	cases.
,, ,, third week	4	,,
,, in 30 days	1	case.
,, ,, 38 ,, ...	1	,,

Diagnosis.—It is easy to establish the fact that a considerable percentage of the mortality in typhoid is due to perforation of the intestine, and also that a goodly number of these cases may be saved by early recognition of the lesion and its closure. The great difficulty is the diagnosis. To get the best results the accident must be recognised early and appropriate treatment be instituted promptly. Here is the great difficulty, the question of early diagnosis. Some of our standard text-books are misleading in their remarks on the diagnosis of typhoid perforation. If it will not be considered too presumptuous for a colonial to criticise writers in the great educational centres of Great Britain I would like to say that when a recent edition of Choyce's "Surgery" says that the symptoms that suggest perforation are the sudden onset of acute pain referred to the umbilicus or to the right lower half of the abdomen, with tenderness on pressure and muscular rigidity, most marked in the right lower quadrant of the abdomen, and that there are nausea and vomiting and other symptoms of acute infection, and when Howard in his "Practice of Surgery," issued this year, says the symptoms of typhoid perforation are sudden, acute abdominal pain with collapse and fall in the temperature, they fail to appreciate the difficulties that surround the question of the diagnosis of typhoid perforation. The occurrence of perforation is but seldom indicated by such well-marked, striking symptoms. Furthermore, a fatal peritonitis may develop in typhoid without any perforation discoverable at necropsy as reported in the Munich necropsies and in various medical journals.

The first indication that a perforation has occurred is usually pain. It was present in 75 per cent. of this series of 83 cases and absent in 25 per cent. 75 per cent. of them had either sudden crampy pain or sudden persistent pain in the following regions mentioned in order of frequency: generalised, right lower quadrant, umbilical zone, left lower quadrant, epigastrium, and left hypochondrium. In 25 per cent. of these cases the pain was generalised or in the right or left lower quadrants. Often the pain will not be severe enough to impress upon the nurse the need of sending for the medical man unless she has been specially trained in a typhoid ward. An important point in the training of a typhoid nurse is to teach her to send for the interne whenever a typhoid patient complains of abdominal pain. In 25 per cent. of cases not having pain at onset the following conditions were found: in 11 per cent. toxæmia obscured all signs; in 4 per cent. the condition was obscured by severe concurrent hæmorrhage; 4 per cent. were not diagnosed; 1 per cent. had chills; 2 per cent. had rigidity; and 4 per cent. had vomiting. In regard to time, 62 per cent. occurred at night and 38 per cent. in the day time; 4 per cent. of the cases had definite profuse sweats immediately after the perforation.

The symptom that I would place second because of its constancy and significance is change of expression. The change of appearance in a majority of the cases was quite evident. 65 per cent. showed a very definite alteration, 28 per cent. a gradual change, and 7 per cent. no change. This change in appearance was manifested in a picture of suffering from pain, a sudden pallor, a change from a feeling of comfort to that of distress, a restlessness, cardiac failure, vomiting, painful defæcation, loss of rallying power after hæmorrhage, a chill, profuse sweat, general malaise, an unaccountable change in general condition for the worse, or sometimes a feeling on the part of those in attendance that something had happened that they could not account for.

Tenderness was present in some degree in 88 per cent. of the cases and absent in 12 per cent. In 50 per cent. it was generalised; in 20 per cent. limited to the lower abdomen; in 16 per cent. to the right lower quadrant; in 9 per cent. to the left lower quadrant; in 2 per cent. to the right upper quadrant; in 1 per cent. to the left upper quadrant; in 1 per cent. to the upper abdomen; and in 1 per cent. to the umbilical zone. As for time of appearance, in 50 per cent. of the cases it came with pain at the onset; in 20 per cent. within the first hour; in 16 per cent. within the second hour; in 5 per cent. within the fourth hour; in 2 per cent. within the eighth hour; in 2 per cent. within the tenth hour; in 2 per cent. within the twelfth hour; and in 1 per cent. within the twenty-fourth hour.

Rigidity.—85 per cent. of the cases showed distinct rigidity, and 15 per cent. did not. Of this 85 per cent. showing rigidity, 44 per cent. showed it from onset of trouble; 22 per cent. within the first hour; 8 per cent. within the second hour; 4 per cent. within the third hour; 6 per cent. within the fourth hour; 6 per cent. within the sixth hour; 8 per cent. within the twenty-fourth hour; and 2 per cent. within the seventy-second hour. As to location, 39 per cent. showed generalised rigidity; 22 per cent. rigidity of the right lower quadrant; 22 per cent. of the lower half of the abdomen; 8 per cent. of the right upper abdomen; 5 per cent. of the left upper abdomen; and 4 per cent. of the left lower abdomen. In a very few instances the term "resistance" would more correctly designate the condition present.

Little or no value can be attached to the absence of liver dulness. If the area of liver dulness has been noted from day to day and then suddenly disappears in association with abdominal pain, it is significant. It is valueless in a distended abdomen. It was obliterated in 45 per cent., not changed in 16 per cent., and not mentioned in 39 per cent.

The fall in temperature so often spoken of rarely occurred. Occasionally there was a fall of one or two degrees in six or eight hours, but only in a few cases did any spectacular drop, such as from 103° F. to normal, take place. In one case the temperature rose from normal to 104° in two hours.

The pulse changes were always clear. A rapid change from slow and good volume to rapid and small often occurred. In 95 per cent. of the cases the pulse quickened. Of the change in blood pressure I cannot speak.

Those who have seen many typhoid perforations will appreciate Fitz's statement that perforation of the intestine in typhoid fever may take place without any suggestive symptoms, and that suggestive, even so-called characteristic, symptoms may occur without any perforation having taken place.

In the text-book perforations diagnosis is easy, but if we are to save a large percentage of these unfortunate patients we must detect the accident in its most insidious form.

Again, it is not necessarily a reflection on the diagnostic skill and sound judgment when the abdomen is opened after careful consideration of the symptoms present by two or three clinicians and no perforation is found. It would seem that this may happen occasionally if conscientious attempt is made to recognise perforation as soon as it occurs. One case is on record in which the abdomen was opened twice in the same patient without finding any perforation. The same abdomen was later opened a third time, the perforation found, and the patient's life saved. We cannot always afford to wait in these cases until the diagnosis is absolutely definite and assured.

What symptoms call for immediate abdominal incision, or rather, what are the minimum of signs that may demand surgical intervention? Persistent pain, definite change for the worse in the expression of the patient, tenderness (either abdominal or rectal), rounding up of the abdomen, and increased resistance to pressure—if these symptoms are present, even if the temperature and pulse are not decidedly altered nor vomiting present, the likelihood of a perforation is very great.

Local anæsthesia has very materially altered our attitude towards early operations. It is no longer necessary to administer a general anæsthetic. The abdomen can be quite well opened under local anæsthesia without causing the patient any pain whatever. The closing of a typhoid perforation is one of the simplest operations in surgery—one that can quite well be performed by anyone capable of carrying out a perfect surgical technique. A 1 per cent. solution of novocaine, with the addition of two drops of adrenalin to the drachm, is thoroughly satisfactory, and may be used freely. Inject first the skin and subcutaneous tissue, and then with a short needle one inch long penetrate the deeper muscular layers along the line of incision. Either a gridiron incision or one along the outer border of the right rectus answers admirably. The perforation is nearly always found in the terminal 12 or 24 inches of the ileum. It is very easily found. A couple of through-and-through sutures usually suffice to close the opening, and then one or two rows of fine Lembert suture complete the operation on the intestine. One should always look for a second, or possibly a third, perforation. These are seldom found, but not uncommonly some of the ulcers in the neighbouring portion of the ileum will present a very thin necrotic-looking base. It is a good practice to enfold such with a single row of Lembert sutures as a precaution against further perforation occurring after the abdomen is closed. Resection of an ulcerated portion of intestine in typhoid is rarely indicated, and should be reserved for the skilled operator and unusually threatening conditions.

When the abdomen is opened the presence of perforation is generally made clear by the presence of fluid, lymph, or the escape of a little gas. Should none of these evidences be observed do not close the abdomen without examining at least the terminal 2 feet of the ileum. It may be that a small pinhead perforation is temporarily closed by a tag of omentum. I have found this condition present in three of my cases. Of course such cases give a most favourable prognosis.

The percentage of recoveries is gradually increasing. Von Leyden in 1884 suggested that the only rational way of treating perforations of the stomach and intestines was surgical. In the same year Miculicz closed a typhoid perforation. The patient, a man 40 years of age, recovered. Fourteen years later Keen collected 83 cases with a recovery percentage of 19·36. In the Royal Victoria and Montreal General Hospitals 140 perforations have been closed and 38 have recovered, or 27·14 per cent. These figures include the work of all the surgeons attached to the hospitals. The figures are not large, but I think they represent 38 lives saved. The other cases of perforation were not operated upon for three reasons, chiefly—viz., not diagnosed; desperate conditions that offered no chance of success; and refusal of patients, parents, or guardian to allow any operation.

It is sometimes very discouraging—viz., my first six cases died, and then I was about ready to give it up. I succeeded in saving my seventh case, and from that time recoveries have occurred more and more frequently. From January, 1909, to June, 1914, I closed 22 typhoid perforations and 11 recovered, or 50 per cent. An important point is to let the house staff feel that it is a reflection on their professional attainments to overlook a perforation. When once they really appreciate that fact cases are sent to the operating room promptly.

Montreal, Quebec.

THE TREATMENT OF INOPERABLE CARCINOMA OF THE UTERUS BY APPLICATION OF HEAT.[1]

BY J. F. PERCY, M.D.

AT the present time the treatment of cancer may be easily differentiated into two classes. The first of these is the operable, which applies almost wholly to early manifestations of the disease; and the second, the inoperable, which concerns us most at this time.

Inoperable carcinoma may be attacked through attempts to destroy the possible cause by vaccines, toxins, serums, &c.; again, by attempts to change the pabulum by which the disease is permitted to progress, such as may be suggested by the theory advanced by Ehrlich under the name of athrepsia. From the standpoint of the experimental laboratory the above theories and the work based upon them widen our mental horizon and stimulate our imagination regarding the whole field of cancer research; but we cannot apply them now, because their value is yet undetermined, and the particular pabulum, or foodstuff, which Ehrlich presupposes for growth, is not fully understood. We do know, however, that the cancer cells can be destroyed by the same agents that will destroy the normal cells; among these may be mentioned caustics, chemicals, actual cautery, and freezing. Our problem is to find in some manner an agent which will affect the physical properties of the growth in such a way as to kill the cancer cell; if this cannot be done completely, then to retard or inhibit its growth, permitting normal cells to retain their growth and function. Certain agents have been found to which carcinoma is more vulnerable than are normal cells. One of these is radio-activity in its various forms. Unfortunately, the area of application of this agent is limited to such a degree that we are compelled to search for some other element of wider application.

[1] A paper read before the Clinical Congress of Surgeons of North America, London, on July 30th, 1914.

In our study of agents that will inhibit and destroy carcinoma the first that appeals to us is heat. The history of the ancient and modern use of this method of treating carcinoma is neither unimportant nor insignificant; only our manner of using it has been at fault. In 1905 Paul Ehrlich suggested to M. Haaland [2] the greater susceptibility of certain strains of mixed, inoculable, malignant material to heat. The experimental work, based upon this fundamental intimation of Ehrlich regarding heat, has not only been interesting but of great practical value. Haaland showed that carcinoma cells are more vulnerable to heat than are those of sarcoma, and die after an exposure of half an hour to 44° C. (111·2° F.). It has been demonstrated by Clowes [3] that all tumour cells exposed to a temperature of 45° C (113° F.) in vitro die. Loeb [4] has demonstrated the death of sarcoma cells when exposed to a temperature of 45° C. (113° F.) for 30 minutes, while Clowes [5] and Baeslack [5] place it at 44° C. (111·2° F.) for the same period of time. Jensen [5] places the vulnerability of cancer cells at 47° C. (116·6° F.) for five minutes. Lambert [6] has shown a definite relationship of damage between the degree of heat and the time of exposure to both normal and malignant cells. His investigations have demonstrated that sarcoma cells are destroyed when exposed to a temperature of 42·5° C. (108·5° F.) for from 24 to 48 hours, 43° C. (109·4° F.) for 6 hours, 44° C. (111·2° F.) for 50 minutes, and 46° C. (114·8° F.) for 20 minutes; while normal connective tissue cells survive these various exposures. M. Doyen has shown that the death-point of carcinoma cells is 55° to 56° C. (132° F.). An identical degree of heat is necessary to destroy the micrococcus neoformans, which he believes is the etiological factor in cancer. E. Vidal [7] in a most interesting observation noted the arrested development of tumours in four patients, with a temperature above 40° C. (104° F.). Fearing that his experience in these cases was a mere coincidence, he daily exposed tumour-bearing mice to temperatures above normal, and found not only that their tumours showed degenerative changes but that the mice lived longer. A spontaneous lymphosarcoma which developed in a bitch also diminished rapidly and finally disappeared when the temperature rose to 40·8° C. (105·4° F.) after the puncture of the zone of Richet. These observations and experiments of Vidal are startling in their significance, and give tremendous point to his statement that all the methods for treating carcinoma which have come out of the experimental laboratory have no beneficial influence whatever unless the reaction which they initiate is accompanied by fever. This is true of all vaccines and toxins, such as the nectrianin of Bra, Doyen's micrococcus neoformans, [8] the toxins of Coley [9] and the vaccine of Otto Schmidt. The experiments of Bier [10] show that the intravenous injection of foreign defibrinated blood raises the body temperature, and this is true also of the use, in the same way, of the colloids of gold, silver, and copper. The observation of the older physicians, who noted the disappearance of malignant activity following infection by erysipelas, claims our interest in a new way. Pierre Delbert has confirmed the experiments of Vidal on the deleterious action of increased body temperature in cancer.

Reduced to the simplest statement, our problem in inoperable cancer has always been twofold: first, to get rid of the gross mass; and second, to destroy the progressive metastases. The second point usually loses much of its significance in the overshadowing presence of the primary great mass. If what Vidal and others tell us is true, it is a rational procedure to attack these morbid masses with heat. But a method tending to raise the temperature of the whole body above 40° C. (104° F.) is impracticable, because dangerous. In addition, it is uncertain, and we cannot regulate it. We are compelled, then, to find some method more local in its application which will exert the greatest destructive process on the gross mass of cancer and endanger, to a minimum degree, the normal connective tissue cells.

The only agents so far found worthy of consideration are hot air, hot water, steam, electro-coagulation, fulguration, and actual cautery. Hot water, hot air, and steam are shown by Doyen to be of no practical value because of their slight penetration. Electro-coagulation affects the tissues for a depth of 5 to 8 cm. in two minutes. The rapidity of action, the difficulty of control of the electrode, especially in the cavities, the complicated apparatus necessary, together with the refinement of technic and specialised judgment required of the operator, make this method impracticable in the treatment of the cavity carcinoma. The de Keating-Hart method of fulguration [11]—i.e., the sparking from a high-frequency current of high tension after the surgical removal of the bulk of the mass, especially when superficial—is worthy of notice in this connexion. In the hands of the originator, by preventing relapses, it has undoubtedly improved the statistics of operative methods in advanced cancer over those where cutting procedures alone have been employed. Durig [12] and Grau, however, insist that the only beneficial result from fulguration is due alone to the heat and not to any specific action on the tissue cells. It is only just to the originator of this method of using high-frequency currents to state that he denies that this is the mode of action in his method. He insists that where heat is obtained in this way it is due to the reduction in the length of the spark, replacing the tension by thermic effects, which is a mistaken use of fulguration. The methods just enumerated, in the hands of their originators, have added much to our knowledge of cancer therapy. But the apparatus required to carry out the technic is extensive, complicated, and expensive. In addition, to be effective it demands not only specialised knowledge, but a refinement of judgment that requires more than the average experience.

In the way of comparison it has been my pleasure to suggest a practical system of applying heat in otherwise inoperable carcinoma of the uterus which has none of the objections that can, with reason, be urged against the methods already enumerated. [13]

[2] Haaland, M.: Imperial Cancer Research Fund, Third Report, 1908.
[3] Clowes, G. H. A.: Brit. Med. Jour., December, 1906.
[4] Loeb, Clowes, Baeslack, Jensen, quoted by Clowes, Annual Report of New York State Cancer Laboratory, 1910.
[5] Ibid.
[6] Lambert, Robert A.: Demonstration of the Greater Susceptibility to Heat of Sarcoma Cells as Compared with Actively Proliferating Connective-Tissue Cells. Journal of the American Medical Association, Dec. 14th, 1912, p. 2147.
[7] Vidal, E.: Travaux de la Deuxième Conférence Internationale, pour L'Étude du Cancer, Paris, 1911, p. 160.
[8] THE LANCET, April 7th, 1906, p. 964.
[9] THE LANCET, July 17th, 1909, p. 173.
[10] Bier: Deutsche Medicinische Wochenschrift, July 18th, 1907, No. 29.
[11] De Keating-Hart: Pathogenesis and Treatment of Cancer, Paris, Section V., Therapeutics xv., Seventeenth International Congress of Medicine, London, 1913, pp. 273-294.
[12] Durig, A., and Grau, A.: Der Energieumsatz bei der Diathermie. Biochemische Zeitschrift, 1913, xlviii., 480. Quoted in the Journal of the American Medical Association, May 31st, 1913, p. 1707.
[13] The Results of the Treatment of Cancer of the Uterus by the Actual Cautery, with a Practical Method for its Application. The Journal of the American Medical Association, March 9th, 1912, vol. lviii., p. 696. A Method of Applying Heat Both to Inhibit and Destroy Inoperable Carcinoma of the Uterus and Vagina. Surgery, Gynecology, and Obstetrics, September, 1913, p. 371.

The penetration of heat by this method can be definitely, although perhaps crudely, determined and regulated. Where the malignant process is at all accessible the method has almost no limitations. The required apparatus is not only easily portable, but also inexpensive. I refer to the development of heat through a most efficient electric heating iron, which can be perfectly regulated by means of a rheostat when applied to the involved tissue. With this electric heating iron and my water-cooled speculum and the vaginal dilator a maximum penetration and dissemination of heat is obtained in the involved structures. More than this, the low degree of heat which my experiments show to be more effective than the intense heat already mentioned can be maintained accurately. This low degree of heat does not burn up the cancerous mass but merely makes it so hot that the hand of the surgeon, encased in a medium-weight rubber glove, cannot hold it. When this degree of heat is reached and maintained for from 10 to 20 minutes the cancer cells are absolutely killed, while the normal tissue cells are not injured. The important thing is not to convert the pathology into charcoal. The charcoal or carbon thus formed inhibits the further dissemination of heat not only through the cancer mass but beyond. More than this, when the pathology is converted into charcoal drainage is prevented for a number of days. This permits of the absorption of a larger quantity of broken-down cancer cells than the average of these patients can tolerate, and many of them die as a result of this mistaken method of applying heat. Carbonisation is produced in a few minutes by a cautery heated to a bright cherry-red colour. Carbon inhibits the dissemination of heat. To overcome this still greater degrees of heat are required, which are extremely difficult to control, endangering the rectum, the bladder, and the ureters. In another publication[14] I have given the details of some experimental work which well illustrate the practical application of this very important factor. The heating iron, when used through the water-cooled speculum, should not be hot enough to scorch a pledget of white cotton if laid on the heating iron even for half an hour. No smoke or smell of burning tissues should issue from the speculum, as would occur if they were being carbonised. The ear placed near the speculum should hear only a gentle simmer or bubbling, while the heating head is in the diseased mass.

My experimental work, and the operation itself, demonstrate that when this "cold iron" is applied to the affected tissues, not only is there much less destruction of normal cells, but a far greater penetration of heat, sufficient to kill carcinoma. Cancer is destroyed when the temperature in the mass is raised to 50°–55·5° C. (122°–131·9° F.), while the vitality of normal tissues is not changed until the temperature exceeds 55° to 60° C. (131° to 140° F.). The basic idea, then, of this treatment—and this cannot be too often emphasised—is not cauterisation, but the production and dissemination of heat in the gross primary mass of cancer. There is no other method or technic familiar to me that will influence in a destructive way so great an area of malignant tissue with a minimum amount of harm to the uninvolved structures. This technic, in a tremendously effective way, destroys the primary malignant focus. With this accomplished, the newer methods, especially the X ray, that have been shown to be of supreme value in the destruction of the small isolated foci, in or just outside of the pelvis, make a combination of effort in the management of these otherwise hopeless cases most promising in its possibilities. From my experience, I am convinced that it is not always best to attempt to destroy at one sitting a large mass of carcinoma. These patients are rarely in the condition which invites long anæsthesia. The application of the heat to a degree which devitalises the major part of the exuberant overgrowth and rids the patient of her local focus of mixed infection produces within two weeks a surprisingly beneficial result. This is especially noticeable if cachexia has at all been a marked symptom. A second or even third application of heat is not only safer, unless the involved structures are small, but it gives the operator a much better opportunity to reach finally the outermost confines of the disease.

When my technic in the application of heat in these cases is decided upon, I would strongly advise against the use of the curette or other operative measures, for the reason that the heat is distributed through the medium of the pathological overgrowth which we wish to destroy. Heat does not encourage the extension of metastases, while the curette and knife do. Again, scar tissue is not formed after the use of the curette, but it is the usual sequel after the application of the heat, and I have yet to observe the redevelopment of cancer in cicatricial tissue. Where the surgeon believes that a modern total hysterectomy should be the operation of choice in the less extensive forms of uterine carcinoma, I know of no more rational procedure than the methods here outlined, which should precede the final operation at least by three or four weeks. In a personal case, where this treatment was applied to an active, stinking, bleeding, vegetative-like mass springing from the craterous edges of a practically destroyed cervix uteri, no evidence of carcinoma was found on serial section eight months afterwards, when the uterus and cervix were removed through the abdomen.

I shall leave the statistics of my results in the treatment of inoperable carcinoma for a future paper. All that may be said at this time is that I believe that a large number of cases, if not practically hopeless when first presenting themselves for treatment, will give approximately 50 per cent. remaining free from recurrence over five years. In addition, my work along this line convinces me that the limits of benefits to be obtained by the application of heat in inoperable carcinoma have not yet been reached. I am working out a method by which the amount of heat entering both the pathological and normal tissues can be accurately gauged. With this, the degrees of heat in the tissues at various distances from the heating head can also be determined. This will make it more definitely and accurately certain that the required temperature known to destroy cancer is entering the parts involved. The management of complications, the most serious of which is the prevention of rather late hæmorrhages, is a matter of importance. In 50 cases this sequel has followed in two private and in two clinic cases. Only one of these, a private case, has died from the hæmorrhage. It will probably prove to be true that the uterine arteries, or possibly even the internal iliacs, should

[14] Best Methods of Discouraging the Activity of Inoperable Cancer: A Study of Heat in Cancer. The Journal of the American Medical Association, May 23rd, 1914, vol. lxii., p. 1631.

be tied in every case immediately preceding the treatment by heat.

In mentioning these important problems growing out of the practical application of my method I do not wish to be understood as minimising the great benefits which this technic has already given to a rather large number of otherwise hopeless cases of inoperable cancer of the cervix and body of the uterus, but rather to express the hope that with the improvements which can undoubtedly be made in the use of heat in cancer a wider and wider application of this extremely valuable method may be found.

Galesburg, Illinois, U.S.A.

FACTORS OF SAFETY IN CLEFT-PALATE SURGERY.[1]

BY JOSEPH RILUS EASTMAN, M.D., F.A.C.S.

IN the Langenbeck or similar flap operations there will be much less likelihood of separation of the wound margins and consequent failure of union if the mattress coaptation sutures, after being reinforced by a simple running suture, are further supported by a continuous relaxation suture passing round the free edge of the anterior palatine arch.

The anterior part of the soft palate for a distance backward of 8 or 10 mm. from the edge of the hard palate contains practically no muscular fibres, being composed almost entirely of palatine aponeurosis. Therefore the anterior portion is much less movable than the rest of the soft palate. The tensor palati acts upon this part of the palate, but as this is usually divided when the Langenbeck flaps are dissected up, it is not an important factor in causing separation of the wound margins. The posterior and large part of the soft palate contains muscular fibres in abundance and, is freely movable, being the portion upon which most of the palatine muscles act. The supporting or relaxation suture referred to follows the course of the palato-glossus muscle or constrictor isthmi faucium. As a rule, the use of this arch suture obviates the necessity of division of the levatores palati and palato-pharyngei muscles. This affords a decided advantage, since the section of these muscles reduces the blood-supply to the flaps and can have only a harmful effect upon subsequent phonation. Fine celloidin linen or von Brun's hemp, such as is used for the mattress sutures and the continuous coaptation suture, should be used for the suture which is to immobilise temporarily the anterior palatine arch or arcus palato-glossus.

The immobilising suture may be introduced as a series of knotted loops or as a running button-hole suture. The former is the more secure. The knotted suture is introduced by passing a small curved needle bearing the long linen or hemp thread through the edge of the anterior palatine arch on one side near its base—that is, near the side of the tongue. The thread is drawn through to its middle and secured with a reef knot leaving the tail of the suture long. At a distance of 3 or 4 mm. from the first or outermost knot the needle is again passed through the edge of the arch; the tail of the suture is taken up and another reef knot tied. This process is continued around the anterior palatine arch to its base on its opposite side, the suture crossing in front of the base of the uvula. The manner of applying the running button-hole suture requires no explanation.

Such a suture immobilising the anterior palatine arch reinforces the coaptation sutures against the traction incident to deglutition. In cases in which there has been failure of union in the anterior part of the soft palate, the use of the arch suture described has established union of the posterior part of the soft palate, followed promptly by closure through granulation of the forward defect. Such a suture is much more secure than the mattress suture for the reason that tension is distributed over eight or ten points instead of but two, and the danger of cutting out is proportionally lessened. (See Figs. 1, 2, 3, and 4.)

General anæsthesia was never of much value in cleft-palate surgery, and with the present development of local anæsthesia may be said to answer no valuable purpose. Elimination of the general anæsthetic and employment of local anæsthesia remove many of the dangers of palate surgery, and add greatly to its simplicity. If adrenalin be added to a solution of novocaine the technical difficulties are diminished in a surprising degree, as hæmorrhage then becomes negligible. The lessening of hæmorrhage is not only important because it renders dissection of flaps and the passing of sutures so much easier of execution on the bloodless field, but also because it safeguards the patient against shock and serious disturbances of metabolism. Local anæsthesia not only protects against shock by minimising hæmorrhage but also, as Crile has taught us, by acting as a nerve-block.

If the solution used is not too strong—that is, not stronger than an aqueous solution of 0·5 per cent. of novocaine (1–200) with 0·02 per cent. of adrenalin (1–5000), the danger of slough is inconsiderable. In the newborn, 10 to 20 drops of this solution on each side suffice to induce anæsthesia and blanch the tissues.

In the Langenbeck operation the point of the hypodermic needle should be entered slanting inward, along the line of the lateral incisions, to be made for dissection of the lateral flaps. The forcing of the fluid under the mucoperiosteal flap facilitates the subsequent dissection. The solution should be injected by gentle pressure from the line of the lateral incision toward the free edge of the cleft to the end that paring of the edges of the cleft may be attended by minimal hæmorrhage. If local anæsthesia be used, the head of the patient may be placed in any position to suit the convenience of the operator without danger of blood entering the air passages.

In extensive operations the swallowing of more or less blood is almost unavoidable. No matter what position is used or what precautions are taken, some blood is usually drawn into the stomach during the repair of cleft palate. After an extensive palate operation the blood is sometimes discharged in vomitus, but more often it is passed off by the bowel. The presence of this blood in the stomach of an infant or small child is not infrequently productive of serious disturbances of metabolism. The symptoms arise usually very soon after the deglutition of the blood, sometimes within a few hours. The absorption of the pyrogenic constituents of a large quantity of blood quickly induces a high fever. The pyrogenic substances here concerned are probably identical with those which cause the so-called "aseptic surgical fever." It is established that solutions of

[1] A paper read before the Clinical Congress of Surgeons of North America, London, July 30th, 1914.

hæmoglobin have a pyrogenic action. Schimmelbusch isolated from the blood a pyrogenic ferment, and has demonstrated that this body, which is a product of the normal metabolism, when introduced into the circulation in sufficient quantities can give rise to high fever. By others the decomposing materials which are fabricated in the intestines either with or without the coöperation of bacteria.

The experiments of Schmidt and Hammerschlag led them to believe that transfusion of blood into an animal will always produce more or less fever

FIG. 1.

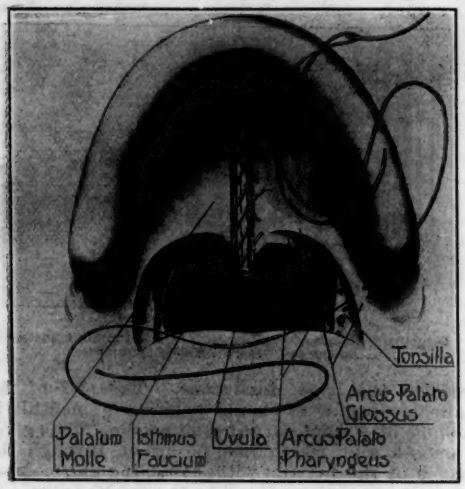


FIG. 2.

FIG. 3.

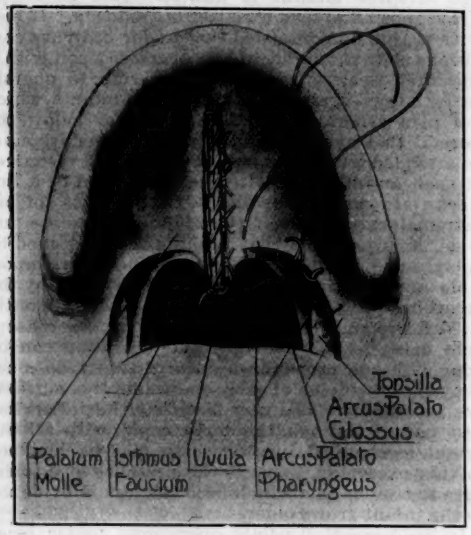
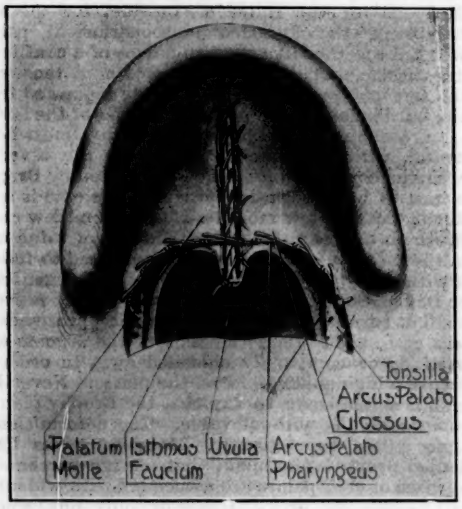


FIG. 4.



The Figures illustrate Palate Relaxation Suture.

heat-producing property of blood has been attributed to fibrin ferment and the nucleins. Whether these substances actually produce heat or merely interfere with heat elimination is not understood. It is likely that there is some intimate relationship between the so-called aseptic surgical fever and that fever occurring in conjunction with constipation following operations. The pyrexia in either case is doubtless due to the absorption of soluble and that free fibrin ferment may be found in the blood of fever patients very much more often than in those having a normal temperature. Thus, it appears that some constituent of the blood, whether hæmoglobin, fibrin ferment, a nuclein or an albumose, has the property, on being absorbed into the general circulation, of producing fever.

Observing infants after cleft-palate operation it has occurred to me that the degree of fever varied

directly according to the severity and duration of the operation—that is, the more blood swallowed the greater the pyrexia. It is possible that the direct absorption of blood from the stomach does not produce the fever in these cases. It is, of course, thinkable that the presence of the blood simply leads to fermentation of other intestinal contents with consequent disturbance of metabolism, but however this may be, the fact seems established that the blood in the stomach of an infant is either directly or indirectly thermogenic and is therefore a serious menace because of the high fever which it may induce. Conversely, it has not been difficult to show that the prompt removal of the blood from the stomach of the infant by lavage militates strongly against the development of the fever. The introduction of a medium-sized male catheter and thorough rinsing of the stomach, if done promptly after palate operations, will therefore remove an element of danger.

In palate surgery, as in other surgery, much depends upon the selection of the appropriate operation for the single case at hand. There is little doubt but that the failure to choose the proper operation for the specific case is more often culpable for failure than any of the other recognised causes of failure. There are so many varieties of cleft palate that there can never be a single operation which will apply to all cases. There always will be many operations. The development of the art cannot eliminate them.

In many cases of narrow cleft combined with high cathedral arch, it is not difficult to coapt the edges precisely and without tension after separation of the mucoperiosteum from the hard palate. In cases of high palatal arch, therefore, if the cleft be not too wide, it is useless to make paralysing incisions for the relief of tension, for the two halves of the loosened muscoperiosteal palate will fall together like the two halves of a cantilever drawbridge, and may be sutured without tension if the soft palate be quite completely separated from the hard palate at the posterior border of the latter.

In cases in which the hard palate is almost horizontal, with associated widening of the alveolar arch, the compression method advocated by Brophy is not to be disregarded provided the case is seen during the first few months. I have found few cases in which the compression method was of value, and in these few instances have been obliged to follow it with a flapping operation after Lane, Langenbeck, or Davies-Colley. I have not been able to prevent a slight turning inward of the alveolar processes in any case, even when the root of the zygoma was partially or completely chiselled away in order to secure a high application of the plates. Nevertheless, it is a mistake to say that the Brophy plan of compression is without value. The deformities of cleft palate vary greatly. Many surgeons have denied Brophy's statement that a large percentage of cases of cleft palate are associated with widening of the alveolar arch. However, only one whose observation embraces every cleft palate everywhere could say that this associated abnormal widening of the alveolar arch is never present. Now and then it is found in association with a flat or nearly horizontal hard palate and complete wide cleft, and in such a case Brophy's plan of compression may with good reason precede a flap operation. In such instances Brophy's apparatus of silver wire and lead plates may, I believe, with some advantage be replaced by malleable iron wire and plates with soft rubber pads. (Fig. 5.) The rubber lying between the aluminium plate and the alveolar process minimises trauma and exerts a constant elastic pressure. Malleable iron wire is so much stronger than silver wire that its value is much greater when considerable force is required. The twisted ends of the wire should be allowed to hang out the corner of the child's mouth. Thus they are always available for twisting and

FIG. 5.

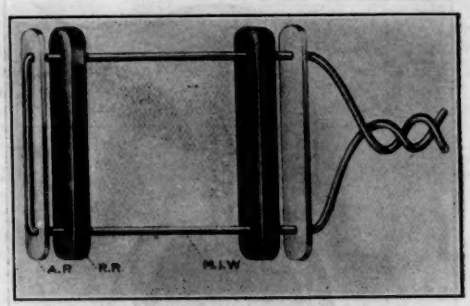


Diagram of apparatus recommended. A.P., Aluminium plate. R.P., Rubber pad. M.I.W., Malleable iron wire.

occasion the least annoyance. The end of the malleable iron wire should be brazed smoothly to the butt of a stout curved steel needle. This gives a smooth joint which may be drawn through the tissues of the maxilla without adding unnecessary laceration to that produced by the needle point.

It is an old and quite generally accepted view that to operate for cleft palate on a child under the age of three months is unwise. This is, as Sir Arbuthnot Lane says, a matter of tradition. It may with reason be contended that under ordinary conditions cleft palate should be operated upon within the first week after birth. The rule to operate early, however, should not apply to infants which are in a general physical sense so far below the normal that even a slight surgical procedure must be attended with great risk. The physical resources of such an infant can often be augmented by a few weeks of careful feeding. In the case of an extremely weak baby, if the cleft be complete and wide, it is probable that nothing can be gained by delay, since adequate feeding is difficult or impossible, and resisting power is steadily reduced by the breathing in of cold air through a roofless mouth. G. V. I. Brown, who counsels in favour of a reasonable delay to the end that the operation can be done with the proper assurance of safety, does not deny the advantage of early operation, if conditions are favourable. The very fact that the infant has just passed through the birth canal, with all the brutal mechanical insults which may be incident to this excursion, suggests the presence of a tolerance to traumatism which becomes less in evidence as the infant grows older.

In ordinary cleft-palate operations under local anæsthesia during the first week the loss of blood should be trivial, but however this may be, the danger from loss of blood is not greater than at a later period. Experience has not suggested the slightest foundation for the truth of the statement that young infants do not bear the loss of blood well. If there is any reliable evidence to the effect that a very young infant does not bear the loss of a given proportion of its blood as safely as an older individual we have no knowledge of it.

The vital resistance against trauma and hæmorrhage of guinea-pigs and rabbits has a higher index

upon the day after birth than upon succeeding days. Professor B. D. Myers, of Indiana University, states that a baby rabbit can be operated upon up to 12 hours after birth without an anæsthetic and with no apparent perception of pain, there being no outcry during such a procedure as the enucleation of an eyeball. Eighteen hours after birth such operations cause the animal to cry out. Myers calls attention to a probable relationship between these phenomena and the circumstances that at the time of birth the sensory nerves are in an imperfect state of medullation and are, therefore, not good conductors. It is not known at what time medullation becomes complete in the human. Osmic acid is known to blacken medullated nerves, but the nerves do not blacken with this agent up to 14 hours after birth.

Another phenomenon of interest in this connexion may be noted by removing first the heart of a rabbit 12 hours old and then that of another rabbit 24 hours old. The heart of the 12-hour rabbit will continue to beat for an hour and a half, whereas the heart of the 24-hour animal will cease almost immediately. This single phenomenon, if it may be taken to indicate anything, suggests a marked difference in vitality (even if it be of an automatic sort), or a great difference in sensitiveness to external influences.

After early operation the nasopharynx is forcibly dilated and developed by breathing. Nutrition is not impaired and the child is brought into normal condition before speech defects are established.

There is little doubt but that surgeons who make a rule to operate in the second or third year will have a lower mortality rate than those who operate early. The reason for this is not far to seek. Only the strongest survive the two or three years without early operation. The late operations are, therefore, good surgical risks. How large a percentage of those which are not operated upon early perish from disturbances of nutrition before the third year it would be difficult to estimate. It may safely be conjectured that the percentage is high. Many of such can be saved by early operation.

Indianapolis, Ind.

SUTURE OF THE LEVATOR ANI MUSCLE IN PERINEORRHAPHY OPERATIONS.[1]

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THE selection of a subject which is suitable for discussion before this society is a matter of some difficulty, since matters which are of the highest interest and importance to the gynæcological surgeon are not so necessarily to the general surgeon. At the same time, it is more likely that a specialist will be of interest to his hearers if he deals with a subject which for the moment is of interest to himself, and so I have selected an essentially gynæcological subject.

There are other reasons why I have selected this particular gynæcological subject. In the first place, although it is a generally accepted fact that the support furnished by the levator ani muscle, either with or without its investing fascia, is essential to the pelvic organs, none of the older methods of perineorrhaphy provides a means of such suture. In the second place, it is surprising how many of the present generation of gynæcologists are content to continue to practise these operations, because, and this is my third reason for my choice of subject, they consider, and in fact they are directly told, that suture of the muscle, however essential it may be, is a difficult operation and one not devoid of danger. I do not think that I need spend much time in defending my first reason. Lawson Tait's, Martin's, Hegar's, and Kelly's original operations all neglect to take the levator ani muscle into consideration. It is true that occasionally they may result in causing its suture, but this only occurs when the muscle is not far retracted, while when it is retracted and when its suture is more imperative they fail. As to my second reason, any gynæcologist present can say whether or not it is right as well as I can, and he can say whether my third reason is not also right, and whether the omission to suture the muscle is not the result of the idea that such suture is difficult.

Döderlein and Krönig, in the latest edition of their work on gynæcological operations, and Martin, of Bumm's Klinik, in an article on the suture of the levator ani muscle and fascia, are largely responsible for perpetuating this idea. They, however, are apparently strong advocates of suture, and it seems a pity that their writings should rather tend to complicate the operation, and so to prevent its universal adoption.

I have practised systematic suture of the levator ani muscle for the past six or seven years, and I think I may say that I have sutured the muscle in every case in which I have performed perineorrhaphy during this period except where the muscle was absent or atrophied, but when I stated this fact at a discussion on the subject I was told that I never sutured it. The reasons given for this statement were, first, that Krönig showed how easy it was to mistake a more superficial muscle for the levator ani; and secondly, that Martin said that suture of the levator was a difficult operation involving on extensive dissection, whereas my operation was a simple and easy one. It is just because it is simple and easy that I take up the time of the society with this paper, in which I desire to show, first, that there are no anatomical difficulties in the way of muscle suture; and, secondly, that there are no practical difficulties.

The structures which are involved in a perineorrhaphy operation from without inwards are as follows: (1) skin; (2) superficial fascia; (3) the constrictor vaginæ muscles and the superficial transversus perinei muscle; (4) the deep transversus perinei muscle; (5) the levator ani muscle; and (6) the vaginal mucous membrane. We may at once dismiss a number of these structures from consideration, because their suture is a part of any perineorrhaphy operation that has ever been devised. These are the skin and superficial fascia, the constrictor vaginæ and superficial transversus perinei muscle, and the vaginal mucous membrane. This leaves two muscles for consideration—the deep transversus perinei and the levator ani. The deep transversus perinei muscle rises from the neighbourhood of the point of union of the pubic and ischial rami. As it approaches the middle line it spreads out. A few of the most anterior fibres pass to the anterior wall of the vagina and lie behind the urethra. The remaining fibres pass behind the vagina to the central point of the perineum (Thompson). A great deal of importance has been attached to this muscle by Krönig, who apparently considers it is a structure which is sufficiently

[1] A paper read before the Clinical Congress of Surgeons of North America, London, July 28th, 1914.

long both to afford support in cases of slight prolapse and to be mistaken for the levator ani. In his description of perineorrhaphy as performed in cases of slight prolapse, he says that after the initial incision the fibres of the deep transversus can be seen and their course demonstrated by traction. They lie over the pubo-rectal part of the levator muscle and have often been mistaken for the latter. "To prevent this mistake the diverging muscle bundles should be followed to the sides, the deep transversus perinei passes towards the ischial tuberosity, while the levator ani passes forwards towards the pubis." He then goes on to show how this muscle can be sutured. [Slides were here shown.]

There are two points raised here with which I must deal at once. The first is that Krönig regards the deep transversus perinei as a structure which can not only be easily found, but which is strong enough to be used to reconstitute the pelvic floor. I should hesitate to say in the face of so eminent an authority that I did not regard either of these statements as correct, even though anatomists and one's own personal experience showed that they are incorrect, were it not that on an earlier page of the same article, Krönig himself places the importance of the deep transversus perinei before us in a true light. Here Krönig definitely states that the deep transversus perinei in nulliparæ is as thick as the little finger, while in multiparæ and those with poorly developed muscles it is reduced to mere strands of muscle fibre. It is thus apparently possible that when one comes to perform a perineorrhaphy in the muscular nullipara one may be able to find and to derive help from the deep transversus perinei.

My second point concerns the anatomy of the muscle, and that there is something radically wrong in Krönig's statements about it is shown by comparing his anatomical drawing of the deep transversus perinei with his drawing of the same muscle as exposed during operation. [Slides were here shown.] It is difficult to conceive how a muscle possessing the anatomical relations shown in the first drawing could come into the position in which it is seen in the others. As I have said, I hesitate to express an opinion contrary to such an eminent authority, but still I cannot help pointing out that I think the fibres which in his drawings of perineorrhaphy purport to represent the deep transversus perinei, really represent some bundles which have been accidentally isolated from the lower and inner edge of the levator ani. Martin puts the case very well when he says: "It is anatomically scarcely possible that Krönig could see the deep transversus passing out from the pubis to the walls of the vagina, when operating on cases with marked atrophy of the muscles." I think, then, that Krönig's drawings lay a quite unnecessary and a most perplexing stress on the possibility of confusing the two muscles.

The part of the levator ani with which the gynæcologist is concerned rises from the back of the body of the pubis, along an oblique line which extends from the lowest limit of the symphysis upwards and outwards to the obturator canal, and also from the obturator fascia for a limited extent (Thompson). It passes backwards at the side of the vagina, about half an inch above the hymen, and then similarly at the side of the rectum to be inserted mainly into a median raphé between the anus and the tip of the coccyx. It has also apparently a slight insertion into the vaginal and rectal walls at the point at which it crosses the latter, and it sends a few fibres to meet those of its fellow of the opposite side in the central point of the perineum. It has not, however, any considerable insertion into the perineum, and the union of its fibres which are produced in this region by operation is purely artificial, and in no way a reproduction of the condition of affairs existing before laceration occurred. If the finger is passed high into the vagina of a nullipara and then drawn down along one lateral wall exerting a slight outward pressure, it comes to rest on the upper surface of the muscle, the extent and relations of which can be readily ascertained. It will also be obvious that the main masses of the muscle pass backwards at each side of the perineal body with a distinct separation between them. If a similar examination is made in a case of fairly extensive perineal laceration the lateral masses of the muscle will still be felt, but the gap between them will be greatly increased in consequence of their outward retraction. Further, if a similar examination is made in the case of a patient in whom suture of the muscle has been carred out, the upper border of the lateral masses will be obvious, and so will the fact that they actually meet one another in the middle line throughout the whole antero-posterior depth of the perineum. Lastly, if the muscle is exposed from below by the method which will be described later, and if it is caught in a forceps and drawn down, the finger in the vagina readily proves that the forceps is holding the muscle which forms the pelvic floor and no other. For this reason I have no hesitation in saying that it is impossible for any one who has become at all familiar with the details of the operation to mistake the muscle for any other structure in the pelvic floor.

Just as the possibility of mistaking a practically non-existent structure for the levator ani has been exaggerated, so has the difficulty of the operation and the extent of the dissection required. I cannot understand this latter exaggeration, but, to show that it exists, I quote a sentence from an article by Martin, of Bumm's Klinic, in which he describes an operation that appears to have very few points of difference from the one I habitually practise. Martin writes: "If the fibres of the levator ani are to be brought into view, the connexion between the pelvic fascia and the superficial diaphragmatic fascia must be divided. This, however, means a very deep dissection, and causes hæmorrhage if a broad strip of the pubo-rectalis is laid bare, because one is working in the neighbourhood of the recto-vaginal venous plexus. When the muscle is approximated, the needle frequently pierces this plexus, and so causes emboli as Bumm has described."

I have criticised adversely from the standpoint of my own experience both Krönig's and Martin's efforts to attach difficulty and danger to the routine suture of the levator ani. There is, however, one disadvantage of a slight character to which they both allude, and which I think requires attention. I refer to the fact that the exposure of the muscle and its separate suture lead to the formation of dead spaces between the vaginal mucous membrane and the upper surface of the muscle. If these spaces are allowed to remain in a condition in which blood can accumulate in them, infection of the clot from the rectum is very liable to occur and to convert the hæmatoma into an abscess. There is, however, a very simple and essential

method, which I shall presently describe, of obliterating such spaces, and so of preventing the accumulation of blood in them.

Before describing the operation which I have evolved for myself, and which I habitually practise, I would like to say that I do not claim anything original for it, and that so far as I can see identical principles of operation must have been adopted by many others. It is only because so many gynæcologists seem to consider that routine muscle suture in the course of a perineorrhaphy is difficult and hesitate to perform it on this account, that I describe my own technique which I have followed practically unchanged for the last six years. I cannot give the total number of cases on which my assistants or myself have operated, but during the last three and a half years 346 perineorrhaphies for chronic laceration have been performed at the Rotunda Hospital, in practically every one of which the levator ani has been sutured. In an occasional case union has failed to occur, particularly in the early instances, and a hæmatoma has formed; but there has never been a death, or even a patient whose condition gave rise to anxiety owing to the occurrence of emboli from punctured venous plexuses.

I should also like to say, in case the slides of the operation appear familiar to some of you, that the drawings from which they were taken were made just two and a half years ago for me from my operations, and that I take no responsibility for their resemblance to any other illustrations which have been drawn and have appeared since. Within the last two months I have had certain anatomical details in them slightly altered, as the levator muscle was placed at too superficial a level.

The essential features of the operation are as follows: (1) The careful dissection of the necessary amount of vaginal mucous membrane off the rectum; (2) the exposure and suture of the separated levator ani muscles; and (3) the careful approximation of the cut edges of the vaginal mucous membrane in such a manner as to leave no projection or redundancy. The operation is carried out as follows. The extent of the perineal tear is carefully determined, and its anterior edges are marked out by bullet forceps. A third bullet forceps is applied to the perineal skin just behind the posterior edge of the tear. The position of the separated edges of the levator ani is by palpation through the mucous membrane of the vagina. An incision is then made from side to side along the line of junction of the skin and the vaginal mucous membrane. This incision cuts through the skin and any underlying scar tissue. A flap of vaginal wall is then dissected up off the underlying rectum. At its lowest part it is firmly held to the rectum and the sphincter ani by cicatricial bands, the result of the old cicatricial healing. As soon, however, as these have been cut through the separation of the remainder of the flap by blunt dissection is an easy matter. When the dissection of the flap is complete a triangular space is exposed, which is bounded laterally below by the remains of the superficial vaginal and perineal muscles, and at a deeper level by the pubo-coccygeal fibres of the levator ani muscle, while its floor is formed by the rectum. It is then an easy matter to catch the edges of the levator with clip forceps or dissecting forceps, and to draw them downwards and inwards until they meet in the middle line. If the separation and atrophy of the muscle are marked, then it may not be possible to draw the edges down sufficiently, but in the great majority of cases they can be brought into view. Three or four interrupted sutures of catgut are then passed through them from side to side, so that when tied they will approximate them in the middle line; for the present, however, they are left untied. The next step is to trim the vaginal flap into proper shape, so that when the operation is complete there may be no redundancy. The cut edges of the flap are then brought together by a continuous catgut suture passed from above downwards, and ending at the vulvar orifice. This being done, the catgut sutures in the levator muscle may be tied. The last step consists in the introduction of silkworm gut sutures passed so as to close the skin edges of the perineal wound. These sutures are passed from side to side, and traverse the skin and the remains of the superficial perineal muscles and also the elevator muscle, so as to supplement the buried catgut sutures. Sometimes during this procedure there may be hæmorrhage from the hæmorrhoidal vessels. Any bleeding vessel, if of large size, should be caught and tied, but, as a rule, the best method of stopping bleeding is by proceeding rapidly with the operation.[1]

I have mentioned the tendency there is to the formation of dead spaces between the vaginal mucous membrane and the upper surface of the levator ani, as a result of the necessary stripping up of the vaginal flap and the separation of the edges of the muscle from the sides of the vagina. The final step of the operation is directed towards the prevention of the accumulation of blood in such spaces, and is, in my opinion, an essential precaution. It consists in the firm plugging of the vagina with iodoform gauze. The plug must be applied most carefully, so as to avoid injury to the vaginal sutures, and in such a manner that it lies wholly above the muscle, with the exception of the end which hangs out through the vulvar opening. It is quite impossible to introduce it satisfactorily by merely pushing it upwards through the narrowed orifice. The reconstituted perineum must be drawn carefully backwards by means of a narrow retractor passed into the vagina, so as to lie above the levator muscle. The retractor which I use for the purpose is known as Doyen's anterior vaginal retractor, and is made by Collin of Paris. Though intended as an anterior retractor, it possesses a blade which is set at just the correct angle to the handle to allow it to pull back the posterior vaginal wall and the muscle in the manner required for the insertion of the plug. By means of it it is possible to introduce a strip of gauze about three inches wide and some five to six yards in length in such a manner that, while the gauze expands the upper part of the vagina and keeps the posterior vaginal wall in close contact with the sutured muscle, it throws little or no strain on the sutured mucous membrane which lies below it. I have described this step in detail because I attach very great importance to it, and because it is impossible to carry it out satisfactorily without a suitable appliance, such as the retractor I mention.

The advantages of the foregoing operation are its ease and its rapidity. In an ordinary uncomplicated case it can be finished in less than ten minutes, and it very rarely takes more than 15 minutes to perform. I should

[1] This portion of Dr. Jellett's address was illustrated.—ED. L.

like to sum up my conclusions briefly. 1. Routine suture of the levator ani is an essential part of perineorrhaphy. 2. Routine suture is always practicable, except when the muscle is wanting owing to atrophy after injury. Such absence is very rare, and when it occurs it is impossible to reconstitute the perineum satisfactorily. 3. The exposure and suture of the levator ani are neither difficult nor dangerous.

Dublin.

THE RESULTS OF RADICAL OPERATIVE TREATMENT OF CANCER OF THE UTERUS.[1]

BY THOMAS WILSON, M.D. LOND., F.R.C.S. ENG.,
PROFESSOR OF MIDWIFERY AND DISEASES OF WOMEN IN THE UNIVERSITY OF BIRMINGHAM.

History.

THE operative treatment of uterine cancer has made slow but, on the whole, continuous progress since surgery was made safe by the work of Lister and Pasteur. Until 30 years ago surgical intervention was practically limited to cancers of the vaginal cervix, and the operation was done with the actual or galvanic cautery. In 1882 Pawlik reported 136 infravaginal amputations of the cervix performed by C. Braun with the galvanic écraseur; 10 patients died, and of the survivors at least 12 remained free from recurrence for five years and upwards. Byrne in 1889 had done 81 cases by the galvanic cautery, and in 35 there had been no return of the growth for periods varying from 3 to 17 years. The operation was limited in its scope, and was soon superseded by Schroeder's supravaginal amputation of the cervix, which was applicable to a larger proportion of cases, had a mortality varying at first from 8 to 12 per cent., and was followed by freedom from recurrence for two and three years in about 40 per cent. of those reported upon. In this country Lewers did 33 of these operations, in 6 of which the patients remained well for more than five years; the operable ratio is not given, but was probably much less than 20 per cent.; the five-year absolute curability would thus not exceed 2 per cent.

Vaginal hysterectomy was first performed on regular anatomical lines by Czerny, and in the later "eighties" began to displace the supravaginal amputation in England. The first important discussion on the subject took place at the Obstetrical Society in 1885, when W. Duncan introduced two tables of collected cases—one showing 137 cases of abdominal extirpation of cancerous uteri with 99 deaths, an immediate mortality of 72 per cent.; and the second table embracing 276 cases of vaginal hysterectomy with 79 deaths, or 28·6 per cent. mortality. The general conclusion arrived at in the paper and subsequent discussion was that the risks practically condemned vaginal hysterectomy as an operation for cancer. Seven years later, in a review of the subject in the *Journal of Obstetrics and Gynæcology of the British Empire*, I examined the literature of the subject, and showed that in competent hands the operation was applicable on an average to from 25 to 33 per cent. of the cases which applied for treatment; the immediate mortality was 5 per cent. or less; 25 to 33 per cent. of the cases that survived the operation remained well and free from recurrence for five years and upwards; and the absolute curability of uterine cancer by this operation varied between about 4 per cent. (Schauta ap. Waldstein) and 9·5 or 10 per cent. (Winter and Kaltenbach).

In the same review references were made to the extended operation carried out with the help of a vagino-perineal incision, by means of which the parametrium could be widely removed. In 1901 Schuchardt had reported on 60 such cases, and claimed an absolute curability of 24 per cent. of the number of cases presenting themselves for treatment. Since then the operation has been largely practised by certain operators, and its advocates claim that access to the seat of operation is as good, that the danger of injuring neighbouring structures is less, and that as wide a removal of the parametrium can be made by this route as by the abdominal. The dangers of bleeding and sepsis seem to be little inferior to those of the abdominal operation, and the risk of implantation of cancer cells would appear to be equally great.

By the extended vaginal operation Schauta, until 1911, obtained a five-year absolute curability of 16·6 per cent. on 211 operations for cervical cancer performed in a series of 447 cases applying for treatment. The primary mortality was 8·9 per cent., but in the last three years had been reduced to 3·7 per cent. In this country the chief exponent of this operation was Sinclair, of Manchester, and since his death the method appears to have fallen almost entirely into disuse. Among my own early operations I made use of the vagino-perineal incision in a few instances, but in the second case, one of cancer of the body, an implantation metastasis arose in the vagino-perineal scar within a few months; after that I ceased almost entirely to employ this incision in operating for uterine cancer.

At about the same time as the extended vaginal operation was being worked out, the example set in the surgery of mammary cancer stimulated operators to endeavour to find a method of removing the uterus together with its neighbouring connective tissue and lymphatics. Hysterectomy by the abdominal route was therefore once more attempted, and in 1895 Clark and Rumpf first dissected the ureters in order to remove as much of the parametria as possible, and Ries proposed the removal of the pelvic lymphatic glands. In 1898 Wertheim in Vienna began the remarkable series of operations which has served to establish the operation and make it known by his name in all parts of the civilised world. For the last ten years this operation has been gradually displacing the extended vaginal hysterectomy, which is now regarded as its only possible rival. The immediate results are steadily improving and many of the dangers and disadvantages of the operation have been overcome. Thus suppuration and sloughing of the abdominal incision with consequent hernia are now prevented by carefully guarding the incision during the operation, septic peritonitis is prevented by suitable vaginal antisepsis, and shock and exhaustion become less common with increasing experience.

Some surgeons attach great importance to the use of the actual or galvanic cautery in operations for uterine cancer; in this country Herbert Spencer is the chief advocate of this method. In America Byrne achieved remarkable success by its use, and X. O. Werder has recently very strongly recommended combined vagino-abdominal hysterectomy by the cautery method; in his hands it has given

[1] A paper read before the Clinical Congress of Surgeons of North America on July 30th, 1914.

an absolute five-year curability of 16·5 per cent. on 39 cases.

In this country the abdominal operation is becoming the routine method, because, in the first place, it affords better oversight of the field of operation than the vaginal method; in the second place, because operations by the vaginal route have never been extensively practised here, and thus skill is easier of attainment in a new operation if it is performed by the abdominal method; and thirdly, because only by the abdominal route it is possible to remove the affected glands. This last advantage is likely to prove of increasing value in the future. Many operators in their haste have concluded that it is useless to remove the glands, and have stated that when they are invaded the disease always recurs after operation. Wertheim has, however, published 14 cases in which carcinomatous glands were found, and which nevertheless remained free from recurrence for upwards of five years. For the reasons stated the abdominal operation is likely to become more and more generally adopted. It cannot, however, be applied to all cases. The prolonged Trendelenburg posture is dangerous for old patients, for those who are very fat, and for certain women with visceral complications. In such cases the vaginal operation affords a better immediate outlook, and in the old patients especially it is often followed by a long freedom from recurrence.

Difficulties of Estimating Results of Operations for Cancer.

The difficulties of estimating justly the results of any curative method of treatment of cancer are very great by reason of the uncertain course and duration of the disease. Cancer does not grow with equal steps, but now halts, again recedes, and anon makes rapid and tumultuous progress. In different patients the earliest symptoms make their appearance at very various stages of the disease. When cancer begins in the uterus one patient has recognisable symptoms at the very beginning, while another is conscious of nothing unusual until the disease is already very far advanced. The duration of the disease is in the highest degree uncertain; of two women with the affection apparently in the same stage, one may die in a few weeks and the other live for several years. In the practice of the operating surgeon groups of cases, successful as regards ultimate cure, alternate with other groups apparently similar, but all ending in rapid recurrence. All which things tend to show that the actual living virus of cancer, when at length it is discovered, will be found to pass through varying phases of growth and activity, now active and virulent, now stationary or sluggish.

These uncertainties in the course of the disease have been illustrated, and to some extent explained, by the experiments on mouse cancer. Here also marked variations are observed in the rate of proliferation of the cancer cells. Some tumours on inoculation grow rapidly, certainly, and progressively; others increase slowly; still others tend to regress and disappear; and all degrees of virulence are found between these extremes. The tumour cells exhibit what may for convenience be called positive and negative phases of proliferative activity.

On the other side, marked differences exist in individual hosts as well as in the various organs and tissues of the body. In some organs and persons cancer appears to take root easily; it grows rapidly and soon becomes generalised. In some very early cases of uterine cancer the regional glands are already invaded; while in patients dead of the disease the glands are reported to be free in as many as 54 per cent. The same uncertainty is illustrated in the varying fate which befalls tumour emboli in the lungs of patients with malignant chorion-epithelioma. Relative immunity varying in degree resides in some organs and tissues, and in certain individuals. Not every person exposed to the causes of cancer, whatever these may be, develops the disease. Many are called, but few are chosen.

Here, then, are two factors which go far to explain the impossibility of forming an opinion on the course of the disease and on the probable result of operation in any individual case. Little that is definite is known of either of these factors, and we can only hope that patience and perseverance will eventually lead to their elucidation. In the meantime the uncertainty and variability of the disease render it imperative that, in forming an opinion on the results of any method of treatment, observations shall be made on large numbers of cases and shall extend over a very considerable time. Averages are of use in comparing results in the mass, though they are of none in individual prognosis.

Standard for Comparison.

In estimating the risk of any new operation it has always to be borne in mind that, while there are dangers inherent in the operation, there are also dangers that appertain to the operator. The first 10 or 12 new operations carried out by an individual surgeon usually teach him most of the difficulties and dangers that are to be encountered, and with increasing experience the mortality due to the personal factor rapidly diminishes. The bearing of this remark lies in the application thereof. I think it would be just to exclude from the general consideration of the subject the first 10 or 20 cases of Wertheim's operation done by each individual operator. In this way a true idea of the danger due to and inseparable from the operation itself might more easily be formed.

In proportion as the operation for uterine cancer has become more extensive the demands as regards ultimate cure have become more exacting. At first, since the average duration of the disease from the onset of symptoms to the death of the patient was understood to be one and a half years, freedom from recurrence for two years after operation was a surgical triumph; then a term of three and later of five years' freedom was demanded. Latterly it has been suggested by Weibel among others that the term should be extended to seven or more years, inasmuch as a certain number of patients show late recurrence. That this undoubtedly happens was shown in three of my patients in whom the disease returned after 6, 6½, and 9½ years respectively. But art is long and time is fleeting, and the necessity is urgent of a convenient and sufficient standard to enable us to estimate and compare results. For this purpose five years would seem to answer all legitimate requirements, and it is to be desired that published results should conform to this standard.

Only those who have examined published writings with a view to find out what the operations for uterine cancer can fulfil can appreciate the chaos and confusion that have arisen from every writer setting up his own standard. The literature of the subject is largely made up of attempts to estimate the value of the different operations by arithmetical

methods which bristle with fallacies of every conceivable kind. The higher mathematics has been called upon to assist, for instance, in the formulæ of Winter and Waldstein. To the making of statistics there is no end, and many figures are a weariness of the flesh. All complicated formulæ are superfluous, and it appears to me a sufficient, and the only fairly reliable, estimate of results can be made by comparing the total number of cases of cancer that apply for treatment with the number known to be free from recurrence five years later. And even here there are many opportunities for error.

Another important observation that should be, but is not, superfluous must be made: that under no circumstances is it any longer justifiable to publish the mixed results of treatment of cancer of the body and of the cervix. The two varieties should be kept entirely distinct and separately discussed.

In the large German clinics we find that the cases of cancer of the uterine cervix afford a ratio of operability of 45 to 60 and even higher, and an absolute curability of 20 per cent. Wertheim's five-year completed statistics of 450 cases show an operable ratio of 46 per cent., with a primary mortality of 19·5 per cent., and an absolute curability of 19 per cent., 186 of 979 patients being known to be alive and free from recurrence at the end of five years.

In this country, with rare exceptions, the operability is not greater than from 30 to 40 per cent., and the total curability than 10 per cent. The low operable ratio is not due to any difference in the disease, but rather to the fact that the general public and the main body of the medical profession have not yet grasped the truth that uterine cancer is curable in a large proportion of those cases that apply early for treatment. The consequence of this ignorance is that women do not seek medical aid promptly, and that when they do the necessary investigation is only too often delayed.

The Surgery of Uterine Cancer in Great Britain.

In Great Britain, as generally speaking in America, gynæcological work is spread over a large number of clinics of small or moderate size, and the opportunities afforded to the individual operator are comparatively limited. In testing and establishing a new operation, such as the extended abdominal hysterectomy for uterine cancer, this arrangement has many disadvantages when compared with the large clinics and extensive opportunities that are found on the European continent. To this more than to any other cause is probably due the fact that these operations have been practised extensively and successfully in Vienna and Germany far in advance of the work that has been done here.

Published papers in the British journals on the extended operation for uterine cancer have been comparatively few, and to a large extent made up of descriptions of technique with occasional suggestions for its improvement. Hastings Tweedy in 1911 published notes of 48 cases of uterine cancer operated on by the abdominal method. Among these were included 33 operations for cervical cancer with an immediate mortality of 8, or 24 per cent. Comyns Berkeley has described the results obtained by him and Bonney in the three years ending June, 1910. Among 112 cases of cervical cancer 71 were operated upon, an operable ratio of 63; the immediate mortality was 22·5 per cent.; and the patients remaining free at the end of three years amounted to 40·5 per cent. of those operated upon, or 54·9 per cent. of those recovering from the operation. McCann to June, 1912, had done 52 Wertheim's operations for cancer of the cervix with 3 deaths, and in the five years ending June, 1911, had seen only 5 inoperable cases. Cuthbert Lockyer and Childe have also discussed the operation. There are no British five-year statistics.

I propose now briefly to examine my own work on uterine cancer which has been done in the gynæcological department of the Birmingham General Hospital. This department has 14 beds and is a fairly typical one in this country. In the last ten years most of the out-patients have been seen by the assistants in the department, Mr. J. T. Hewetson and Mr. Beckwith Whitehouse, who have also performed some of the operations and have assisted in most of mine. I have taken all the cases applying for treatment in the out-patient department and all those admitted to the wards, and have added all my own private cases. My thanks are due to Miss M. B. Webb, M.D., whose very efficient and enthusiastic help in following up my results I here gratefully acknowledge.

From the year 1896 until Dec. 31st, 1913, there have been 596 cases of uterine cancer. Of these, in 67 the disease affected the uterine body, and in order to clear the ground I deal with these first. Among the 67, 15 vaginal hysterectomies with no mortality, and 29 abdominal hysterectomies with 3 deaths, were performed. The five-year results are given in the accompanying table:—

Cases of Cancer of the Uterine Body seen until June 30th, 1909.

Total cases seen	50	
Radical operations	31	= 62%
Deaths following operation	2	= 6·4%
Cases free from recurrence for five years and upwards	12	
Absolute curability		24%

The absolute curability of cancer of the body of the uterus here shown appears small when compared with the rate of 50 to 75 per cent. usually claimed, but I believe the latter rate is based largely on fallacies and small numbers, and will prove to be exaggerated.

Cervical Cancer.

Until the end of 1913 there were 529 cases of cancer of the cervix uteri. These can be conveniently divided into two groups according as operation by the vaginal or the abdominal route was the method of choice. In the first period, lasting until the end of 1905, there were 246 cases, of which 37 were operated upon by the vaginal method with 1 death, and 7 by the abdominal route with 6 deaths. In the second period, from Jan. 1st, 1906, to Dec. 31st, 1913, 283 cases were seen, among whom 20 were operated upon by the vaginal route with no deaths, and 72 by the abdominal with 8 deaths. The total immediate mortality of the vaginal method has been 57 cases with 1 death, or less than 2 per cent.; and of the abdominal, 79 operations with 14 deaths, or 17·7 per cent. The great majority of the abdominal hysterectomies were performed by Wertheim's method.

The ratio of operability has steadily increased; in the years 1896 to 1899 it was 14 per cent.; in the last four years it has been more than 36 per cent.

Operable Ratio.

1896–1905 inclusive	18·0%	of 246	cases.
1906–1909 ,,	29·2%	,, 154	,,
1910–1913 ,,	36·4%	,, 129	,,

My total five-year results up to June 30th, 1909, have been investigated and show that, with an increased operable ratio and the adoption of the abdominal method of operation, the absolute curability of my cases has risen from 5·5 to 10·2 per cent.

Results of Vaginal Hysterectomy for Cancer of the Cervix to June 30th, 1909.	*Abdominal Hysterectomy for Cancer of the Cervix to June 30th, 1909.*
52 operations in 288 patients.	32 cases in 98 patients.
Average operability about 18 %.	Operable ratio, 32·5 %.
Death following operation, 1.	Deaths following operation, 9.
Patients survived five years and upwards, 16.	Free for five years and upwards, 10.
Absolute curability, 5·5 %.	Absolute curability, 10·2 %.

Of the patients surviving operation 16 of 51 = 31 per cent. of the vaginal, and 10 of 23 = 43 per cent. of the abdominal, remained well and free from recurrence for five years and upwards.

It follows from my experience that, although the final results hitherto obtained in this country are inferior to those of the best Continental clinics, they are steadily improving and may be confidently expected still further so to do. The immediate mortality of the extended abdominal hysterectomy for cervical cancer has fallen; thus, in my own work, in the six years ending Dec. 31st, 1913, there were 6 deaths in 62 operations, a rate of about 10 per cent. The operable ratio has doubled in the last ten years, and may be expected to rise considerably further when the possibilities of the operation are grasped by the profession at large and by the public. The total number of patients remaining free from recurrence for five years and upwards has also increased nearly twofold in the last decade, and we may hope before long with the surgical methods now at our disposal to achieve an absolute curability of 25 per cent. of all cases of cancer of the uterine cervix.

Hardly a year passes free from the joyous announcement of new and certain cures for cancer. Every new treatment is hailed with acclamation, tried with enthusiasm, claimed to be almost consciously selective in its action on the cancer cells, and then is dropped quietly into the oblivion of disappointing and forgotten things. Hitherto surgical methods alone have stood the test of time and have justified their use, not only by progressively improving results, but also by affording opportunities for increasing our knowledge of the pathology of the fell disease in the human race. The exact nature and the mode of origin of cancer are still veiled from our view, and the seer who shall expound these is eagerly awaited. In the meantime it behoves us to continue to give to our patients the benefit of those methods which give the greatest promise, being neither unduly lifted up by success nor cast down by many and grievous disappointments.

Birmingham.

DONATIONS AND BEQUESTS.—By the will of the late Mr. Charles Chetwode Baily, of Brighton, the testator left £10,000 to the Inalienable Fund of the Royal Sussex County Hospital, Brighton; £5000 to the Special Endowment Fund of the Royal Alexandra Hospital, Brighton; £2000 to the Endowment Fund of the London Hospital; and £1000 each to the Endowment Fund of the Brighton, Hove, and Preston Dispensary; Royal Hospital for Incurables, Putney Heath; and Surgical Aid Society. He also left £10,000 upon trust for his cousin and her issue, whom failing, to the Inalienable Fund of the Royal Sussex County Hospital, Brighton.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF EMBOLISM OF THE RIGHT INNOMINATE VEIN.

BY F. S. CREAN, M.D., CH.B. DUB.,
SENIOR ASSISTANT MEDICAL OFFICER TO THE BERMONDSEY INFIRMARY, S.E.

A MAN, aged 63, was admitted to the Bermondsey Infirmary on Nov. 18th, 1913. Ostensibly he sought admission on account of an attack of vomiting and diarrhœa, symptoms which rapidly subsided. He was extremely deaf, and could give no clear information concerning his previous health. When examined he was found to have an enlarged heart, with a systolic bruit at the apex conducted towards the axilla. Albuminuria was present, while the liver could be felt about an inch below the right costal arch. The temperature was normal, and remained so throughout the illness. Some few days after admission the patient complained of dyspnœa, a symptom which became progressively distressing from day to day. It was now found that there were flatness of percussion note and diminution of breath sound at the right pulmonary base. Eight days after admission venous pulsation in the neck, which had not hitherto been evident, was observed, and presented the striking peculiarity of strict limitation to the left side. This latter appearance was speedily followed by the onset of œdema of the right chest wall and arm, while the radial pulse became obliterated. Within three weeks of the patient's coming under observation gangrene of the right upper limb had become established, the process spreading from below upwards. Prior to death, which occurred in less than four weeks, there was incipient gangrene of both feet. A diagnosis of mediastinal growth was made.

At the necropsy a thrombus filling the right innominate vein completely, extending into the right internal jugular vein and compressing the subclavian artery, was found. The thrombus extended through the superior vena cava to the right auricle, but the obstruction in the vena cava was incomplete. Both tricuspid and mitral valves were incompetent, while the right auricular appendix contained a fragment of ante-mortem clot. There was an effusion of serum into the right pleural cavity. There was no new growth.

Bermondsey Infirmary, S.E.

FATAL INJURIES, INCLUDING RUPTURE OF THE DIAPHRAGM.

BY HERBERT WHITE, M.R.C.S. ENG., L.R.C.P. LOND.,
SURGEON, ROYAL NAVY.

AN account of the following injuries, including rupture of the diaphragm, may be of interest to readers of THE LANCET.

The victim, a man aged 46 years, was standing on the sill of a dry dock superintending the lowering and placing in position of spars reaching from the side of the dock to a battleship. These spars weigh about 175 lb. While one was being lowered the rope carried away, and the spar falling struck

the man on the back, sweeping him off the sill to the bottom of the dock, a distance of 35 feet, striking the projecting ledges on the way. He was brought to the dockyard surgery, where I saw him about half an hour after the accident. He was still alive, with just a perceptible pulse, and was bleeding profusely from the left ear, the nostrils, and the mouth. He expired five minutes later.

The obvious injuries were a compound comminuted fracture of the vault of the skull, involving the frontal and parietal bones, and a fracture of the left tibia and fibula at junction of middle and lower thirds. There were no other superficial signs of injuries.

At the subsequent post-mortem examination the following injuries were found. On reflecting the scalp the fracture was found to run across the top of the skull half an inch behind the coronal suture; from its centre a fracture ran down the frontal bone; the occipital bone was uninjured. On removing the upper part of the brain by section through the crus the only obvious damage was slight bruising of the extreme ends o the occipital lobes. The dura mater covering the base of the skull was not torn. On removing it the transverse fracture of the vault was continued completely across the base of the skull, involving the temporal and sphenoidal bones, the sella turcica was comminuted, and it crumbled under the touch. The cerebellum on removal was uninjured. On opening the thorax, both first ribs were fractured; the clavicles were intact. There was some bloody fluid in the left pleural cavity. When the contents of the thorax were removed a loop of small intestine was seen protruding through the diaphragm into the left pleural cavity. The rupture in the diaphragm was but one inch in length; the intestine proved to be six inches of jejunum. The abdominal cavity showed all its contents uninjured except bruising of the lower pole of the left kidney, but no laceration. The bladder and rectum were intact, but the left side of the bony pelvis was badly comminuted, caused by the head of the left femur being driven upwards into the pelvis. The acetabulum itself was intact, but was entirely separated from the remaining bony structures. The pubic and ischial bones were broken into small fragments; the greater part of the ilium had escaped. The right side of the pelvis and the sacrum were uninjured. The vertebral column was intact.

I believe that rupture of the diaphragm in these accidents is of rare occurrence.

Portsmouth.

A CENTENARIAN.—The death of Mrs. Martha Waldeck, at Twickenham, at the age of 104 is announced.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM.—The Savill prize and medal were presented on July 23rd to Dr. T. Knowles Boney, first winner since the establishment of the prize. In the absence of Mr. Leonard Brassey, M.P., chairman of the hospital, who was unable to attend, the chair was taken by Dr. Harry Campbell, vice-chairman and senior physician. Dr. Agnes Savill presented the medal and prize to Dr. Knowles Boney, and said that the encouragement of the study of nervous diseases was the form of memorial which would have been specially dear to her late husband. The medal and prize of £5 are given in memory of the late Dr. Thomas Dixon Savill, who lost his life in Algiers in 1910. The competition is open to all graduates and senior students of medicine who attend 25 demonstrations in the out-patient department of the hospital, undergo an examination, and write a thesis on a set subject, the subject set last year being Myasthenia Gravis.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF DERMATOLOGY.

Exhibition of Cases.

A MEETING of this section was held on July 16th, Dr. J. J. PRINGLE, the President, being in the chair.

The following cases were exhibited:—

Dr. E. G. GRAHAM LITTLE: A characteristic case of Schamberg's Disease in a middle-aged man. The patches, which were situated on the legs were of 30 years' duration on the left side. The exhibitor had previously observed only one similar case.—Dr. A. DOUGLAS HEATH (Birmingham) had had a marked instance of the disease under his care in a woman, aged 73, in whom the patches had extended from below the knees to the level of the umbilicus after five years' duration.—The PRESIDENT inquired if any dilated capillaries were seen in the sections, and Dr. Little replied that the chief microscopical feature was a cellular infiltration.

Dr. LITTLE also showed a patient who had resided in South Africa, and who had suffered from white leg and cerebral embolism ten years ago, and who had during the past few years developed numerous symmetrical subcutaneous painful tumours of the arms and other parts. There was also pigmentation of the neck. He thought the case might be grouped with the multiple symmetrical lipomata described by Brocq and others.—Dr. F. PARKES WEBER thought they were multiple fatty tumours, but distinct from adiposis dolorosa, which was a more general condition.—Dr. A. WHITFIELD remarked that many cases of adiposis dolorosa had calcified thyroids, and suggested that a radiogram should be taken. He had observed a case treated with thyroid extract in which a large number of the tumours had disappeared.

Dr. LITTLE also showed a case of Lupus Erythematosus in a man who had lived ten years in Pretoria. At the end of February of this year a red patch showed itself on the nose which was treated with X rays and ether snow. He became worse on the voyage home, and now presented patches behind the ear and on the hands, accompanied by pigmentation and greyness of the eyebrows attributed to the X ray treatment. Scrapings showed no micro-organisms.—The PRESIDENT concurred in Dr. Little's view of the case, basing his opinion mainly upon the condition of the hands.—Dr. G. PERNET asked if there was not an underlying condition of melano-leucodermia.—Dr. H. G. ADAMSON diagnosed leucodermia with sclerodermia and thought that the lesions might have been the result of a solar dermatitis.

Dr. LITTLE also showed a case of Sclerema Neonatorum in a child aged 21 months; the whole of the back, face, upper arms and thighs had been involved soon after birth, but spontaneous involution was occurring in many regions.

Dr. LITTLE also showed a case of Pityriasis Rosea with the herald patch on the face and vesication of the feet.—Dr. ADAMSON had seen similar cases in children; and the PRESIDENT alluded to three cases of his own, in two of which primary patches occurred on the face and in one on the glans penis. He mentioned that cases of vesicating pityriasis rosea had been reported in America and the vesicular nature of the lesion when examined histologically had been emphasised by Sabouraud.

Dr. W. KNOWSLEY SIBLEY showed a boy, 16 years of age, who was stated to have had an eruption on the body since he was 8 years old. He presented an extensive eruption, consisting of raised oval or round, firm, tumour-like lesions of a reddish colour, many of them having a semi-translucent waxy appearance, over the greater part of the body and limbs. Sections showed an inflammatory connective tissue new growth in the dermis, with pigment and dilated blood-vessels and some large, well-defined cells showing fat granules. He had not arrived at a diagnosis.—Dr. A. WHITFIELD

said the case resembled an extremely chronic urticaria or prurigo and had no relationship to xanthoma. He thought the lesions were mainly œdematous, as shown by the sections, the majority of the cells being polynuclears with enormous dilatation of the capillaries and lymphatic spaces.—Dr. W. DYSON (Manchester) considered the case belonged to the prurigo group of diseases.—The PRESIDENT expressed the opinion that it was a new type of disease somewhat resembling a case recently shown by Dr. MacCormac and labelled prurigo senilis.—Dr. J. H. STOWERS shared the same view.—Dr. J. M. H. MACLEOD thought the sections showed new fibrous tissue and did not resemble xanthoma; the spaces were dilated lymphatics, and the microscopical appearances suggested a lymphodermia.

Dr. SIBLEY also showed a case of severe Lupus Vulgaris in a woman, aged 41 years, affecting the mucous membrane of the mouth, pharynx, and nostrils, which he had treated by nascent iodine, administering potassium iodide by the mouth followed by chlorine water in lemonade. Locally he applied insufflations of equal parts of iodide of potassium and chalk, the mouth being afterwards rinsed with chlorine water.

Dr. MACLEOD exhibited a woman with chalky deposits consisting of carbonate of calcium in the skin causing inflammatory and suppurative lesions on the arms, fingers, and knees of five years' duration.—Dr. PARKES WEBER remarked that it was an extreme instance of so-called "chalk-gout."—Dr. WHITFIELD mentioned a similar case in which the administration of phosphoric acid had appeared to afford good results.—Dr. LITTLE supported Dr. Whitfield's suggestion, but advocated testing Joulie's reaction before giving the phosphoric acid.—Dr. ADAMSON thought the case might belong to the class of calcareous deposits in the skin which were really calcified infective granulomata.

Dr. DUDLEY CORBETT brought forward a case of Mycosis Fungoides of 12 years' duration in a woman who had had much X ray treatment and had been reported as cured in 1905. She had recently developed lesions on the right free margin of the soft palate and the left lower eyelid, the nature of which was undetermined.

Dr. S. E. DORE showed: 1. A case of Acute Erythematous and Miliary Lichen Planus in a woman aged 24 years. The eruption began three months previously and spread over the trunk and legs, the buccal mucosa on the right side also being involved. The patient had also suffered intermittently from psoriasis for the past ten years, and now presented typical patches of that disease on the knees and elbows. 2. A man, aged 24 years, who suffered from a patchy erythematous eruption of four months' duration on the neck, chest, back, and upper arms. The patches were angular and circinate in outline and of a brownish colour, those on the back being linear and showing a tendency to follow the lines of cleavage. Some of the features of the case suggested mycosis fungoides, others parapsoriasis. There was very little itching, and the presence of infiltration was doubtful. Considerable difference of opinion was expressed as to the diagnosis.—Dr. MACLEOD suggested "xantho-erythrodermia perstans."—The PRESIDENT suggested a microscopical examination and X rays as an aid to diagnosis.

Dr. DORE also showed a man, aged 43 years, who presented a Nodose Tuberculide in the sacral region of 12 months' duration. The tumours were preceded by enlargement and suppuration of the right inguinal glands, probably of a tuberculous character, three years previously. Although the exact nature of the condition was uncertain, it was generally thought to correspond to the "multiple benign sarcoid" of C. Boeck.—The case was discussed by Dr. A. M. H. GRAY, who suggested test doses of tuberculin for diagnostic purposes.

Dr. PARKES WEBER exhibited an extensive and characteristic case of Kaposi's so-called Idiopathic Pigmentary Sarcoma in a man, aged 76 years, from Russian Poland, who had been 24 years in this country but in whom the disease developed only two years ago.—The PRESIDENT agreed with the diagnosis, and thought that good results might be anticipated from X rays, although the disease had been known to recover spontaneously in some instances. The pathological relationships were generally recognised to be more closely connected with the infective granulomata than with sarcoma.

Reviews and Notices of Books.

X Rays.

By G. W. C. KAYE, B.A., D.Sc., Head of the Radium Department at the National Physical Laboratory, &c. London: Longmans, Green, and Co. 1914. Pp. 252. Price 5*s.* net.

THIS interesting and important volume will arouse in a considerable section of the medical profession a sense of gratitude. The large amount of attention that is now given to physical matters, since the advent of the X rays and radium into medical work, has stimulated a desire for a more complete knowledge of the phenomena accompanying radio-activity, and it would be difficult to conceive a work that answers the demand more suitably than the volume under consideration. Dr. Kaye's experience as a teacher and examiner has shown him the need for such a book, not too abstruse and not too mathematical. Indeed, this book can be read with great interest by non-mathematical students without any sense of loss of a real understanding of the physical phenomena attendant on the working of an X ray tube and radium.

The book is not a treatise on the use of radiations in diagnosis and treatment, though these matters are necessarily touched upon. Such matters as the phenomena of a discharge tube, cathode rays, the X ray bulb, factors controlling its "hardness," cause of blackening in use, X ray measurement, nature of the X rays, interference and reflection of X rays—these and many other points such as constantly arise in the mind of students of radiology are here explained so clearly that all may understand. Up to the present it has been possible to get information on these matters only by a search through various scientific periodicals, and when obtained it has been generally disconnected and incomplete. Thanks to Dr. Kaye such unsatisfactory labour is no longer necessary. The book is one that should be in the hands of everyone who is directly or indirectly interested in radio-activity.

Die dynamische Pulsuntersuchung.

Von Dr. Med. et Phil. TH. CHRISTEN, Privat-docent der Universität Bern. Mit 72 Abbildungen. Leipzig: F. C. W. Vogel. 1914. Pp. 164. Price 10 marks.

ACCORDING to the author, in recent times there are three departments of medicine to the study of which exact mathematical physical data have been applied—viz., the dosage of X rays, the doctrine of fractures of bones, and the pulse.

The first part of the book deals with the mechanics of the pulse as a purely physical and mathematical problem. The results are expressed in 31 propositions before the physiological aspects of the pulse and the energy of the heart are considered. The technique of the apparatus used to study the pulse is very fully dealt with; more especially are the physics of the apparatus known as armlets filled with air—which the author calls an energometer—minutely investigated. The whole question is treated in a thoroughly scientific manner, the clinical aspects of the pulse being considered at the end.

This monograph is a most interesting and important contribution to the old, yet ever new, question of the "doctrine of the pulse," treated by

one whose knowledge of physics and mathematics enables him to give the subject a strictly scientific setting. The author's own estimate of his work, by the way, is quite remarkably modest.

The Microscopy of Drinking-water.

By S. CHANDLER WHIPPLE, Gordon M'Kay Professor of Sanitary Engineering, Harvard University. With a chapter on the Use of the Microscope, by JOHN W. M. BUNKER, Ph.D. Third edition. Rewritten and enlarged with coloured plates. New York and London: John Wiley and Sons, and Chapman and Hall. 1914. Pp. 409; plates 19. Price 17*s.* net.

THE hygienic characters of a public water-supply can rarely be separated from those important to its use for technical purposes, and since the dangers to public health lie largely in the possibility of contamination by sewage organisms, attention has naturally been so largely focused upon the bacterial contents of a drinking water that the microscopic organisms forming the "plankton" of lakes and rivers, on which the æsthetic qualities of a water-supply depend and with which this work deals, have been somewhat neglected. The subject is, perhaps, more interesting to the naturalist and the water engineer than to the medical man, and it is for those in charge of public water-supplies that the book is chiefly intended. These larger organisms are nevertheless not infrequently the source of disagreeable or offensive odours and colours in drinking-waters, rendering them unfit for use, and owing to the bulk and rapid increase of the growths grave engineering troubles may occur. The appearance, therefore, of a new edition of a work dealing satisfactorily with this comparatively neglected side of the subject is welcome.

The book is divided into two portions, the first of which deals with a general consideration of the subject, and the second with a classification and description of the microscopic organisms other than bacteria found in water. The scope of the work is much larger than might be inferred from its title; the microscopical examination is associated with a study of the various factors influencing the number, variety, and distribution of various diatoms, algæ, and other organisms. This involves the relation of the plankton to the various sources from which the water is drawn, the horizontal and vertical distribution of organisms in large bodies of water, and, as affecting these matters, a very interesting study of the effect of dissolved gases and of temperature conditions at different depths and at different seasons, carried out by means of the author's thermophone. The consideration of the odours imparted to drinking waters by the excessive multiplication or the excessive destruction of micro-organisms naturally occupies an important section. The water engineer will find interesting information as to the effect of soil stripping of the sites of reservoirs and the influence of this and other factors on water storage, as also on the effect of copper treatment and aeration on the æsthetic qualities of water-supplies. Very little attention is paid to the effect of the various chemical changes described upon pipe corrosion and lead poisoning, but this appears to be due to the comparative rarity of this trouble in the United States, where, according to the author, it is hardly a practical matter. The views expressed on the importance of the surface growth on filter beds to efficient filtration are not orthodox if we follow the author correctly in some not clear writing, and the treatment of the subject is rather brief.

The second part, dealing with the classification and morphology of the more important organisms, is illustrated by a number of satisfactory photo-micrographs printed with the text. A glossary, bibliography, and index follow. The book ends with a series of 19 plates, carefully drawn and coloured, of numerous organisms, with their names and the magnification employed. There are one or two printing slips, but the book is satisfactory in appearance, type, and paper.

Handbuch der Gesamten Therapie.

Herausgegeben von F. PENZOLDT und R. STINTZING. Fifth edition, in seven volumes. Eleventh to nineteenth Lieferungen, inclusive. Vol. II., pp. 49–763; Vol. III., pp. 641–797; Vol. VI., pp. 161–640. Jena: G. Fischer. Price each Lieferung M. 3.50.

THE second volume of this great German work on treatment deals with diseases of the digestive system and diaphragm; the third volume with disorders of the organs of respiration and circulation and the male urinogenital system, excluding venereal disease. The treatment of each disease is carefully considered from every point of view, and the volumes are thoroughly up to date. The work is one that should be found in all medical libraries.

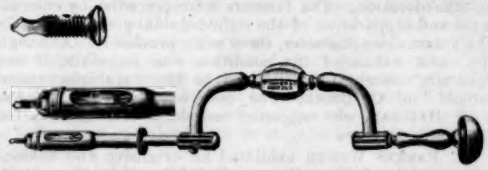
It is odd to find no reference to the treatment of enuresis nocturna with thyroid extract; Talma's operation in cirrhosis of the liver is said, without enthusiasm, to be justifiable in certain cases, and it is recommended that it should be performed under local anæsthesia; Freund's operation—the excision of portions of a number of the costal cartilages—for the relief of emphysematous patients with rigid chest walls is described as unjustifiable.

The intermittent publication of parts of different volumes—parts of vol. vi. are included in the fifteenth and sixteenth and in the eighteenth and nineteenth Lieferungen—renders the reviewing of some works published in Germany an exasperating task.

New Inventions.

A MODIFIED BRACE AND SCREWDRIVER.

I HAVE had made for me an instrument which combines a brace with a Sherman's screw-holding screwdriver. It is supplied with screws suitable for bone plates with drill ends, so that the previous use of a drill is unnecessary. These screws can be obtained either with a coarse or a fine thread. Though American surgeons prefer the latter, I have found the coarse-threaded wood screw preferable, since one is less likely to over-drive it and thus make it



lose its grip. The instrument is new only as a combination and not in its separate parts. I have found that its use simplifies the technique and shortens the duration of bone-plating operations. Under favourable circumstances, it will enable the operator to plate a fractured femur in an adult in less than half-an-hour.

The makers of the instrument are Messrs. Mayer and Meltzer, Great Portland-street, London, W.

W. SAMPSON HANDLEY, M.D., M.S. Lond.,
New Cavendish-street, W. F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, AUGUST 1, 1914.

Presidential Address at the British Medical Association: A Chapter of Medical History.

IT was formerly a reproach to British medicine that the historical side of medical science and art was neglected, but of late years that reproach has been largely removed. There is now a Section of History of Medicine among the many sections of the Royal Society of Medicine; the two Regius professors of medicine or physic at Oxford and Cambridge are zealous and accomplished medical historians; the Medical Historical Museum, generously founded and equipped by Mr. WELLCOME, attracts numerous visitors; and lastly, the foundation of the FitzPatrick lectures at the Royal College of Physicians of London has given rise to numerous admirable historical works dealing either with periods of medicine or with particular phases of medicine, such as pestilence. And this week medical history holds pride of place at a representative gathering of British medicine, for Sir ALEXANDER OGSTON devoted his Presidential address, delivered at Aberdeen before the British Medical Association, to giving his hearers a history of what is claimed to be the earliest teaching Faculty of Medicine within the British Isles—namely, the Faculty of Medicine in the University of Aberdeen. The distinguished surgeon, whose address will be found published in full in the pages of the *British Medical Journal*, drew a picture of Aberdeen as it existed in 1490, a small town of possibly 2000 inhabitants trading with continental ports mainly in dried salmon, but even then an important place, for JOHN MAJOR, writing about 1498, says "Ea tempestate Aberdonia Scotorum erat regia." Except by sea Aberdeen was difficult of access, and this explains the remark in Pope ALEXANDER VI.'s Bull regarding the foundation of the University: "In the Boreal and northerly parts of the Kingdom of Scotland are certain places so distant from other parts and so cut off by arms of the sea and the highest mounains, wherein live rude and illiterate men, and who on account of their great distance from spots where there are schools of learning find it dangerous to travel to where letters are studied, who, moreover, are so ignorant of learning that persons cannot even be found capable of reading the word of God, preaching, or administering the sacraments." But the Pope goes on to say that if there were a university in Old Aberdeen, which is not far from the aforesaid places, "how many inhabitants of the kingdom, and especially of that part of it, ecclesiastics and laymen both, would gladly apply themselves to the study of letters." The prophecy was richly fulfilled.

Where a desire for learning exists there is in general no long interval between the wish and its fulfilment. Full soon the Aberdonians were gratified by the advent of one who was destined to be the great benefactor of the city—namely, WILLIAM ELPHINSTONE, appointed Bishop of Aberdeen in 1483. This great man, of whom Sir ALEXANDER OGSTON gave a most interesting account, was a ripe scholar and an experienced politician. More than that, he must have been an able man of affairs. His first task, and that no light one, was to reform his diocese, and when that undertaking was well in hand he turned to other tasks—the building of a cathedral, the formation of an easy access to the city by land, and the foundation of a university. None of ELPHINSTONE'S cathedral buildings remain, but his bridge, the Old Brig of Dee, finished in 1518, still stands for all men to see. ELPHINSTONE was fortunate both in his parentage and his relations with kings for one who was to found a seat of learning. He was the son of a canon of Glasgow who was the Dean of Arts at the University of that city. He rose to be Lord High Chancellor to JAMES III. of Scotland, and later was Lord Privy Seal as well as a bishop under JAMES IV. The latter monarch had a real love of learning; he introduced printing into Scotland, could speak five continental languages besides Latin, knew "the language of the savages who live in some parts of Scotland and on the islands," and sent his son to be educated by ERASMUS. The Bull for the foundation of the University is dated Feb. 4th, 1494, and one year later the revenues of the Hospital of St. Germanus, which had belonged to St. Andrews, were assigned to it. On Feb. 25th of the same year ELPHINSTONE published a proclamation that the University was now established. The faculties provided for were theology, law (both canon and civil), medicine, and arts; the endowments arising from the Hospital of St. Germanus provided for the teaching of theology and law; but ELPHINSTONE was so concerned about medicine that within a year of the inception of the University he procured from JAMES IV. a charter giving to "Almighty God, the most glorious Virgin Mary, all the Saints, the University and to a graduated Doctor in the Faculty of Medicine the sum of £12 6*s.* yearly," owing to which charter the University came to be called King's College. The first principal was HECTOR BOECE, a friend of ERASMUS. Little is known of any incidents of his headship, but this, says Sir ALEXANDER OGSTON, is possibly the best indication of the quiet prosperity which the University

enjoyed under him. The first professor of medicine, or "mediciner," was one JAMES CUMING, who was appointed before 1503, and who, in addition to his university duties, was charged with looking after the health of the inhabitants of the burgh, the alderman, bailies, council, and community engaging to give him ten marks yearly and sundry other emoluments on condition that he, with his wife and children, reside within the burgh, "go and visit the sick, and show them his medicines, they paying for them." The whole story, as told by the distinguished orator to the British Medical Association, makes a fascinating picture of mediæval times, of which we are producing the merest sketch.

Sir ALEXANDER OGSTON referred to the condition of medical learning in Scotland at ELPHINSTONE'S date, and made here, we think, one statement which is capable of misconstruction. In discussing the question of whether ELPHINSTONE knew Greek, he asked whether he "knew or had heard of the writings of HIPPOCRATES, GALEN, and ARETÆUS, which were then beginning to be translated into Latin on the continent, and to revive the science of medicine, but were unknown in Britain"; and again, in talking of medicine in Aberdeen, "LINACRE had not then introduced the works of the ancient Greek physicians to the profession in this country." This would seem to imply that HIPPOCRATES and GALEN were unknown in Britain, and almost so on the continent, before about 1480. It is true that *direct* translations from the Greek were unknown to mediæval medicine before about 1453, but every mediæval physician knew the works of HIPPOCRATES and GALEN by means of translations into Latin from Arabic or Syriac, these latter having been made from the Greek mainly in the ninth century by HUNAIN and HUBAISH, while the Latin translations from the Arabic were mostly made by GERARD of Cremona in the twelfth century. The "Aphorisms" of HIPPOCRATES with the commentary of GALEN were translated into Latin in the eleventh century by CONSTANTINE the African. Aberdeen is a city of which its citizens may well be proud, but it can hardly at any period of its history have had a more worthy son than Bishop ELPHINSTONE, and it is well that one who laboured so abundantly for the welfare in general of that community, of which he was the spiritual head, and for the promotion of sound learning, including medicine, in particular, should have his good deeds recounted before an audience, many of whom are alumni of his foundation and to all of whom his example is a safe light by which to steer. It may be that after some of the discussions at the eighty-second annual meeting of the British Medical Association differences of opinion, academic or political, will remain; let us hope that these differences will be adjusted in the spirit in which the gentle and learned founder of Aberdeen University would, from what we know of his life, have met them had he been present in the body as he surely was in the spirit.

Hopeful Teaching.

WE publish in this issue several important addresses on medical and surgical subjects which have been delivered in this country during the week, notably one by Dr. A. E. GARROD, one by Sir JOHN BLAND-SUTTON, and a third by Dr. C. H. MAYO, the well-known American surgeon. The addresses of Dr. GARROD (in Medicine) and Sir JOHN BLAND-SUTTON (in Surgery) were delivered at Aberdeen at the annual meeting of the British Medical Association. The main theme of the surgical address, as our readers will find, is the need at present existing for improvement in our surgical results in certain branches of surgery. There is no stationary complacency in this interesting and amusing dissertation. Sir JOHN BLAND-SUTTON acknowledges the great advances made in recent times, but in calling attention to the enormous gift which surgical achievement received through the introduction of anæsthesia, which not only spared the patient the tortures of the operating table, but also rendered possible operations which from their duration had hardly been possible before, he makes a point which has previously escaped attention. For he shows that the facilities which anæsthesia gave to the surgeon did at the time actual harm to surgical progress. The surgeon under the new conditions was induced to undertake operations which the practice of that time did not permit him, except in a very small proportion of the cases, to bring to a successful issue, and the first results to the public were not hopeful. It was not until the researches of PASTEUR and LISTER explained and removed the harmful outcome of the old-fashioned technique, when applied to the new opportunities, that it became possible for surgeons to perform operations of an extended scope with a reasonable certainty of a favourable end. The blessings brought by the introduction of anæsthetics were recognised at once, of course, as by no means limited to the abolition of pain at operations; in the reduction of dislocations they furnished assistance for which they had not been devised. They enabled the surgeon, it was soon found, to replace a dislocated bone, which all arrangements of pulleys had failed to restore to place. But this was to some extent a side issue; until the Listerian procedure reinforced the discovery of anæsthetics surgery did not progress.

At the close of his address Sir JOHN BLAND-SUTTON deals with the surgery of malignant disease of the uterus and the colon, and in pointing out that in these two conditions surgery still has much to learn, his words confirm remarkably Dr. GARROD'S main text that the science of medicine is so complex that we cannot hope to attain any comprehensive notions while we regard one particular subject from any single point of view. The clinical worker must have his special outlook, and the pathologist his special outlook, but their interrelation must be close and their work

mutually confirmatory. Removal of the uterus for fibroids, Sir JOHN BLAND-SUTTON points out, is an operation with a mortality of about 2 per cent., but removal of the uterus for malignant disease of the cervix has a mortality of from 10 to 48 per cent., and this is to be attributed almost entirely to the risk of the infection of the wound with micro-organisms from the ulcerated surface. Many of the cases die in a few days after operation from one septic process or another, such as septic peritonitis, pulmonary embolism, or septicæmia. A very similar state of affairs prevails in the results of the surgery of malignant disease of the colon, and such results cannot be considered satisfactory. Resection of a cancer of the colon is followed by a very heavy rate of mortality, usually over 30 per cent. These deaths are almost all due to septic peritonitis, resulting from infection during the operation, from leakage at the bowel junction, or from failure of union due to the colon bacillus or some other micro-organism present. And even when no septic process leads to an early death after resection of a cancer of the colon, recurrence is extremely common. Some method must be found of dealing with these septic organisms and so preventing them causing septic disease. The surgeon of the future, says Sir JOHN BLAND-SUTTON, will possess aids in his treatment of which we know nothing; he will be able to prevent many of these complications which militate so greatly against the success of operations; his diagnosis will be rendered more sure by the assistance of diagnostic methods as yet undreamed of, and the synthetic chemist will prepare for him chemical compounds which will assist him immensely in his fight against disease. This is another way, the chemical way, of putting the teaching of Dr. GARROD, who points out that morbid anatomy is not an exhausted subject, but is merely strengthening its position by calling up the supports of bacteriology and chemistry. Formerly morbid anatomy and pathology used to be synonymous terms, but as long ago as the days of LIEBIG biochemistry was making its influence felt, and now a new era of pathology has dawned, a fact which the orators at the meeting of the British Medical Association both acknowledge in their eloquent and also their characteristic styles.

Dr. MAYO'S striking address, though in a totally different manner and written as a clinical communication to a clinical audience, carries the same message of hope. He deals with the results of operations for hyperthyroidism, insisting first on the importance of a correct classification of enlargements of the thyroid gland, as a preliminary to the choice of treatment. He defines exactly what group of cases he includes under the title of exophthalmic goitre, and describes the line to be pursued accordingly. Naturally, it is in the cases which are severely affected that there is the greatest difficulty in treatment, and Dr. MAYO lays stress on the importance of looking upon all patients during an exacerbation of hyperthyroidism as medical cases, although most of them may be fit for thyroidectomy at the time they are first seen by the surgeon. In severe cases he ligates the left upper pole of the gland at first, and if this is followed by a grave reaction a week later, he ties the right upper pole, and then four months later he performs partial thyroidectomy, by which time the average patient will have gained some 22 lb. in weight, and at the same time much general improvement will have been obtained. In milder cases, in which the reaction of the ligation is less, a partial thyroidectomy may be performed a week after the ligation. He describes the methods employed in performing the various operations which he uses for hyperthyroidism, and in the case of thyroidectomy he urged the need for adequate exposure of the gland, for he believes that many of the troubles and accidents in the surgery of goitre would be avoided if the gland were sufficiently exposed. We have underlying this address the same intent to show the necessity that all-round knowledge must be relied on in the most special conditions. The physician must support the surgeon, and both must be able to draw upon the accumulating learning of the bacteriologist and bio-chemist, that the science of healing may continue to progress.

Stevens *v.* the British Medical Association.

THE second trial of the action for libel brought by Mr. C. H. STEVENS against the British Medical Association ended on July 23rd with a verdict for the defendants upon the two issues left by Mr. Justice SHEARMAN to the jury. The first trial in October, 1913, lasted for eight days and ended in the disagreement of the jury, so that the conclusion arrived at after seven days' trial upon the second occasion is a matter for considerable congratulation of the defendants. The verdict, moreover, was announced after the jury had only been absent for a quarter of an hour, which points to their having had little difficulty in arriving at unanimity. With their findings all reasonable men must agree, and every member of the medical profession will feel satisfaction in the fact that the British Medical Association in publishing an outspoken and scathing criticism of the methods of an advertising nostrum vendor did neither more nor less than that which truth and justice demanded. The plaintiff complained that he was libelled and asked for damages, and the jury found that the defendants had made good their defence, as there was no libel but only fair comment on a matter of public interest. The matter was truly one of some interest to the medical profession, but still more conspicuously of importance to the public. The documents commented upon by the defendants in their publication, "Secret Remedies, What they Cost and What they Contain," bore a strong family resemblance to others with which we are all

familiar in connexion with alleged "remedies" for disease advertised by unscrupulous traders. The defendants criticised the trader's methods of traffic in plain terms, undoubtedly designed to warn the public against him, and a British jury has promptly and unanimously upheld their action. Such a result must give courage to all of us who dare the perils of actions for libel in the desire to do good and to open the eyes of sick men.

In the witness-box Mr. STEVENS told a circumstantial story of how he was advised many years ago by a medical man to go to Bloemfontein as a sufferer from tuberculosis himself; of how he went to Basutoland, and there consulted a witch doctor garbed in a blanket and a leopard skin, who made him drink a decoction of some root then unknown to him, which at first made him vomit; of how for days he vomited whenever he took the stuff till he nearly gave up all hope; and of how he ultimately was cured. This story, it is true, was somewhat discounted by his letters to a person named WIEMAN, which were put to the plaintiff in cross-examination, and which rather strongly suggested that it was WIEMAN, his prospective father-in-law, and not a witch doctor, who brought a mysterious plant "umckoloabo" to his notice, but it was a tale calculated to impress those who heard it, and presumably it gained credence from some members of the jury in October. It was, however, a feature of Mr. STEVENS'S case that there was a copious lack of corroboration of an authoritative and trustworthy nature with regard to all the material points in his story. No one consulted by the British Medical Association could trace "umckoloabo" in Africa or anywhere else. One or two witnesses for the plaintiff professed to do so, and one of them, a gentleman with medical qualifications, produced what he said were specimens of it, and gave the meaning of the name as "life everlasting." Unfortunately, however, for the plaintiff, who had given the meaning of "umckoloabo" as "blood spitting," a noticeable discrepancy, the specimens exhibited by his witness when submitted to scientific examination were found to belong to a plant of a totally different kind from the specimens which he had himself brought into court. The defendants, on the other hand, suggested that there was krameria in the nostrum, which allegation the plaintiff denied. A prominent feature in Mr. STEVENS'S evidence was the production of witnesses who declared that they had been cured by him of consumption. If these had been corroborated by medical men the essential point in his claims to stay the course of the disease would have been reached, but in the trial it could hardly be said to have been approached. The learned judge in his fair and impartial summing up pointed out that 29 witnesses, no doubt genuinely, believed themselves to have been cured, and left the jury to weigh this against proved instances of failure, and evidence of the probability of error in the judgments formed upon such a topic by the patients themselves. Presumably the jury appreciated as men of common sense the necessity of proof that a man has suffered from tuberculosis before he can be said to have recovered from it, and of proof that a particular agency has cured a patient, stronger than the sufferer's statement that he paid for an advertised compound of unknown ingredients, took it, and afterwards enjoyed better health than before. The jury also, no doubt, gave its full importance to positive scientific evidence as to the failure of the drug supplied by the plaintiff to affect the bacilli of tuberculosis to any extent which could render it effective as a medicine.

Nevertheless, however absurd the pretensions of the plaintiff may appear to members of the medical profession, the issue of the case was by no means a foregone conclusion, and the verdict is for that reason a cause of warm congratulation for the defendants. It is not always easy to justify and defend honest but unsparing criticism of picturesque tales told by one who claims to have benefited humanity. In the minds of some members of the lay public the medical profession has conspired to erect a ring fence around preserves which it claims as sacred for the pecuniary benefit of its members, and the person alleged to be libelled on behalf of the medical profession starts with many points in his favour. There are judges—we say it with deep regret and with an expression of profound respect for the judicial bench of our country—who are not wholly free from bias of this kind. It is perfectly natural that men having sympathies as such should not find it difficult to rid themselves temporarily of opinions which they have a right to hold in their private lives. It is, however, a matter of regret that any such preconceived views should ever render themselves apparent. The result of a case of the nature of that under comment should not depend in any degree upon chance, and yet what defendant in a medical libel action, or indeed in any libel action, would ever be found to profess to indifference as to the judge in whose court he might be about to find himself? It is a sad affair that it should be so, but we doubt if any one who has had experience during recent years in our courts would deny that there are judges whose mental attitude towards certain subjects can be predicted before the case is opened. We congratulate the British Medical Association alike on the courage with which they have taken grave risks, and on the outcome of an important trial where their policy was challenged.

PORTSMOUTH EYE AND EAR HOSPITAL.—Princess Henry of Battenberg opened a new wing of the Portsmouth Eye and Ear Hospital on July 22nd, by which the accommodation for patients has been doubled, bringing it up to 42, and comfortable quarters have been provided for the nurses. The cost of the new building has been £4000, of which the greater part has still to be raised. This hospital, which was started 31 years ago, is now the largest special hospital of its kind (omitting London) south of Birmingham.

Annotations.

"Ne quid nimis."

THE EFFECT OF "MATERNITY BENEFIT" ON MIDWIFERY TRAINING.

MOST medical men retain vivid recollections of their experiences when attending in their student days the midwifery cases prescribed by the medical curriculum. For most medical students obtain their practical obstetric experience on "the district" system, where new aspects of life, some humorous, some horrible, are presented to their gaze. Nor are medical students the only ministers of this particular form of charity; midwives in great numbers also derive their training very largely on a similar system. So that any social experiment which threatens to upset this kind of midwifery practice among the poorest classes is bound to have far-reaching effects upon the education of both medical men and midwives. "Maternity benefit" under the National Insurance Act endows a high proportion of the mothers amongst the labouring classes with the sum of thirty shillings for each confinement. It thus renders those mothers less dependent upon free attendance, and more able to engage a trained obstetrician, whether midwife or practitioner, for the occasion. Such a position is bound to affect the working of the various charities which have hitherto afforded free obstetric attendance to the poor, and incidentally to affect the "district" system of education. In passing, it may be remarked that this preference on the part of those entitled to maternity benefit for paid assistance by no means necessarily indicates any dissatisfaction with the skill of the unpaid workers, but is more likely explicable on personal grounds. The drawback of the "district" system from the point of view of the patient is the impossibility of knowing beforehand who will attend when the summons is sent, and the natural dislike of being in the hands of a total stranger on such an occasion. The extent to which the Insurance Act has actually brought about these changes has lately been investigated, at the instance of the Charity Organisation Society, in London by Mr. E. S. Kemp, who read a paper on the subject before the council of that body on May 11th last. It appears from this report that there has been a very definite and considerable decrease among the midwifery cases treated "on the district" in London directly due to the Act. To some slight extent this is due to the fact that some institutions have increased the charges formerly made, or have imposed charges where none were asked before. But in the main the decrease has been due to the utilisation of "maternity benefit" in securing the services of a paid midwife. At the City-road Hospital the reduction of out-patient cases amounts to 59 per cent., attributable mainly to this cause. In the out-patient maternity departments of the general hospitals the reduction is smaller—namely, 13 per cent. Mr. Kemp says that 6 out of the 12 general hospitals which possess such departments find some difficulty in obtaining a sufficient supply of patients for the instruction of their students, and there is no likelihood of their risking any further diminution by imposing any charge. Three others, however, do make, or propose to make, a charge; these are St. Thomas's, the London, and St. George's. Of the competition for cases in the region to the north of Oxford-street Mr. Kemp has some very scathing and pertinent remarks to make. This district is served by four general hospitals, three lying-in charities, and a women's hospital. A great deal of bribery in the form of relief is stated to exist, and little proper discrimination is exercised as to the circumstances of applicants. Unsuitable patients are accepted freely, and relief in the shape of food and maternity outfits is distributed broadcast. It is quite common for one hospital to complain bitterly that another is poaching on its preserves. That, in substance, is Mr. Kemp's indictment; and it requires an answer. He does not admit that the plea, "We must keep up our school," is any sufficient excuse for the abuses he describes. The whole subject is in need of consideration.

WILD MEN OF THE WOODS.

THE discovery in the woods near Naini Tal (United Provinces) of a wild-looking female child, whose back is covered with hair and whose actions are those of an ape, carries on an immemorial tradition. Stories of wild men and women of the woods abounded in Europe itself as long ago as the sixteenth century, when roads were few and desert and forest were everywhere. The most famous of these recitals is that of the boy of the Ardennes, told by De Humière, huntsman to Charles IX. in 1563. He had killed a dozen wolves when he noticed a she-wolf approaching, followed by a naked child, about seven years of age, who showed a desire to tear the huntsmen with her teeth. The story gained credence at the time from the fact that a mother had some years earlier abandoned an infant girl at the same spot. Simon Goulard tells of a little girl discovered in Hesse, who walked on all fours and made noises like those of a bear. She was ultimately taught to speak. The newly discovered Indian child is supposed by the natives to have been brought up by bears. It is to medical men that the task of educating these remarkable creatures was usually confided. Thus at the end of the eighteenth century the famous Virey, and then Dr. Itard, an able physician and well-known physiologist, undertook the education of a child known as the "savage of Aveyron," which had been taken in 1799 after evading capture for months, as he leapt or crept from branch to branch of the trees in the wood of La Bassine. The boy, stark naked when captured, appeared to be about 12 years old, and his body showed the cicatrices of a number of wounds, which led to the inference that an attempt had at one time been made to kill him. He was well built, active, had piercing eyes, and was ambidextrous, but the conformation of his arms and hands was that of a savage. He ran occasionally on all fours, grew in time somewhat stout, and was always dumb, but not deaf. He preferred raw to cooked food, and detested beds and clothes. Itard's patient attempts to awake his faculties were only partially successful, but led to a number of very interesting observations being made on him. He lived 20 years of a semi-civilised life, and died, still unable to use articulate speech, in 1828. His career is an ample commentary on the simple life of the noble savage of Rousseau. His character was not bad, but not brilliant. He loved freedom and loathed all forms of alcohol, but was not conspicuously grateful or amiable. His was really not a case of savagery, for any savage, even the lowest,

is the inheritor of a mass of tradition and behaviour, and this creature came, as it were, fresh, and unconditioned mentally, into the world. We may most fitly compare him to the mentally deficient or to the morally retarded. The kindly Dr. Itard doubtless christened him Victor, in allusion to the many difficulties which in his case had to be overcome. (The name Victor, by the by, is sometimes given in France to a baby who has survived a very difficult labour. It would be interesting to know whether this kind of medical nomenclature has been observed by any English practitioner.) Victor's health was good. He caught small-pox almost as soon as he came within the zone of civilisation, but he recovered with remarkable rapidity, and refused all the medicines of the day with savage doggedness. The cause of his death, which occurred early in life, is not noted in the documents accessible to us. Probably he died from sheer boredom in Paris, where he was on show. Tradition is full of stories of beast children, from Romulus and Remus to Valentine and Orson. These legends are rather of the nature of totem stories than of actual records of fact, but they point to a belief that animals take kindly to human children. It is no uncommon sight, indeed, to see a very small baby on good terms with a fierce dog. But the idea that a little boy could escape the onset of wolves in a French forest in 1799 is untenable unless, as we are led to believe, he was able to climb trees and to remain in them for long periods. The story of Victor of Aveyron would stagger credibility were it not so well authenticated by eminent French medical men of the early nineteenth century.

HEAT PRODUCTION IN INFANTS.

IN a very interesting report entitled "The Gaseous Metabolism of Infants," recently published by the Carnegie Institute in Washington, Francis G. Benedict and Fritz B. Talbot discuss this question and give a very complete *résumé* of the literature bearing on the subject of heat production in infants as estimated by the direct and indirect calorimetric methods. The net result of the investigation carried out at the Carnegie Institution is to cast very considerable doubt on the accuracy of the generally accepted law of Rubner that the metabolic processes and loss of heat in infants are proportional to the extent of the body surface; Schlossmann and Murschhauser have quite recently defended this law in a series of communications. Benedict and Talbot in their report emphasise the difference between the varying metabolism of infants when they cry or indulge in voluntary movements and their relatively constant metabolism when they are asleep or under conditions of rest. Metabolism under the latter conditions they term "basal" or "fundamental" metabolism. Their inquiry has been largely directed towards a determination of this basal metabolism in different infants. To this end they have designed a very ingenious set of apparatus which can be applied to the infant in a calorimeter, and which is capable of recording graphically its voluntary movements; by a very simple attachment of a stethoscope the pulse-rate can also be recorded. They find that the pulse-rate is a fairly accurate measure of muscular exertion, whether the results are reflected in internal or external work, and that with a rise of pulse-rate there is a more or less parallel output of heat, and presumably, therefore, a more or less parallel increase in metabolism. In order that the basal metabolism may be estimated in any particular case without the disturbing factor of muscular effort, the authors make their observations only during those periods in which the readings of the kymograph and the recording stethoscope indicate that the infant is at rest. The results of observations made under these conditions prove that there is no relationship between the heat lost and the surface area, and that the law of cooling bodies does not apply; "the heat produced is more dependent on the mass of active protoplasm" This may explain the anomalously slow metabolism of fat babies and the more active metabolism of lean ones. Very important deductions may be made from these investigations with regard to the food requirements of infants, for if the loss of heat is, as Benedict and Talbot claim, proportional to the mass of active protoplasm and not to the gross weight or surface area, infants should be fed in accordance with their muscular development and tonus and not in accordance with their age, weight, or size. It is, however, quite possible that a further factor will have to be taken into consideration which has reference to rates or coefficients of metabolism, qualities which may be dependent on dietetic habits or past experiences.

THE RELATION OF PAIN TO INFLAMMATION.

INVESTIGATIONS into the nature and treatment of inflammation made at the Physiological Laboratory of Helsingfors have been published by Dr. Henri Bardy in *Finska Laekaresaellskapets Handlingar*. In his records of the numerous experiments made on the eyes of rabbits the conclusions to which he comes are concise and instructive. His investigations were stimulated by the views on inflammation advanced by Rosenbach in 1902 which were at that date unorthodox. The somewhat vague and speculative views of this writer, when stripped of their most philosophical qualities, attributed to pain a far more important part in the pathology of inflammation than had hitherto been usually granted. He accordingly treated inflammatory conditions with morphia and claimed to have thereby averted attacks of pneumonia and colds in the head. Numerous clinical observations made independently by Spiess pointed to the same conclusions; and of the four signs of inflammation—rubor, turgor, calor, and dolor—he considered dolor the most important, and that on which the other signs depended. It is pain, he suggested, which induces reflex vaso-dilatation, and this, again, is the cause of redness, swelling, and heat. When the affected area is anæsthetised by the transudation of fluid, acting in the manner of infiltration anæsthesia, the remaining three signs of inflammation subside. To his numerous clinical observations supporting this view may be added the observations made by Professor Cramer on an hysterical woman suffering from hemianæsthesia. When her body was exposed to the stings of gnats the anæsthetic areas showed no reaction, while the normal areas presented the raised red spots characteristic of gnat stings. In 1910 Bruce confirmed experimentally these clinical observations, and it is on the lines followed by Bruce that Dr. Bardy has pursued his investigations. Apart from a few insignificant details the observations and deductions made by the two are strikingly similar, and may, therefore, be cited together. When a drop of oleum sinapis is placed on the eye of a rabbit severe conjunctivitis follows, reaching its height in about 15

minutes. But if the eye is previously anæsthetised with cocaine conjunctivitis does not occur until the anæsthesia has passed off. If the eye is anæsthetised by section of the ramus ophthalmicus of the trigeminal nerve, conjunctivitis is still provoked in this eye as readily as before. But if the experiment is repeated eight days later, when the peripheral portion of the divided nerve has degenerated, even repeated instillation of oleum sinapis provokes no reaction. This indicates that the whole reflex mechanism is peripheral. Dr. Bardy has also succeeded in intercepting the conjunctival reflex both by intravenous and local administration of nicotine. He also finds that the conjunctival reaction to oleum sinapis is unhindered by extirpation of the uppermost cervical, sympathetic ganglia. When a rabbit was anæsthetised with ether no conjunctivitis was provoked until the anæsthesia passed off; but then conjunctivitis developed without any further instillation of oleum sinapis. Dr. Bardy concludes with the confession that in the past he has felt like a specious opportunist when giving codeine, morphine, opium, and cocaine for various inflammatory conditions, although the results were excellent. Now, however, he is convinced that this procedure is perfectly rational, and, though he deprecates every treatment of appendicitis other than an operation, he suggests that the frequent success obtained with opium in this disease depends on the anæsthetic action of the drug.

EXPERIMENTAL OPERATIONS ON THE SIGMOID VALVES OF THE PULMONARY ARTERY.

Dr. Alexis Carrel, in the *Journal of Experimental Medicine* (vol. xx.), describes how he has, in seven instances out of ten, successfully carried out such operations as incision, suture, and cauterisation of the pulmonary valves in living dogs. The practical significance of these heart procedures is obvious. The pulmonary valve was chosen on account of its accessibility for the immediate purpose of the operation, which was to determine its practicability and the necessary technique. The operation requires some speed of execution; it is described in four stages: 1. The stoppage of the circulation of the heart. This has already been done in different ways. The best method, and the one adopted in these experiments, was clamping in mass the pedicle of the heart by means of large soft-jawed forceps. The heart was not taken out of the pericardium, but the incision into the pericardium was large enough to permit the easy introduction of one of the jaws of the forceps under the pedicle. Handling was gentle, and to keep the heart in good condition the blood was for a time over-ventilated by means of the Meltzer-Auer respiratory apparatus. When all is ready for clamping this is done, and the heart or vessel is opened at once. It is possible to clamp for as long as 2½ to 3 minutes without subsequent trouble. When the clamp is removed the heart resumes its pulsations, and soon they become again normal. 2. Opening of the pulmonary artery. The pulmonary orifice is exposed by means of an incision made through the anterior wall at a level of, or a little above, its junction with the heart. Immediately there is a large rush of venous blood, and consequently the operating field must be narrowly walled off by silk and cotton padded towels in order to prevent the escape of the blood into the pleura. The particular operation upon the valve is then performed. 3. Closing of the pulmonary artery; through-and-through suture. The time occupied by incision of the pulmonary artery, the operation itself, and the suture of the artery varied between 1½ minutes and 3 minutes. 4. Re-establishment of the circulation through the heart. When suturing is complete the clamp is removed. Generally during the period of the interruption the heart is still beating feebly, but it may have stopped. As soon as the blood is allowed to flow from the vessels into the heart the pulsations recommence, weak at first, but very soon becoming quite normal. Care was taken not to close the pericardium before the line of suture was absolutely without leakage. The general condition of the surviving animals was excellent. They sustained no shock; usually one hour after the operation they walked about, and three or four hours after they ate and drank. The three deaths were due to different causes, all probably to be eliminated with improved technique. One died from pneumonia 20 days after the operation; one died on the table from fibrillary cardiac contractions; the third died from purulent pleurisy. These observations certainly constitute a landmark of cardiac surgery, and allow anticipation with more confidence than hitherto of the possible extension of similar proceedings to man.

THE ORIGIN OF SHOCK DURING ANÆSTHESIA.

To the numerous recent researches into the nature and causation of shock Dr. F. C. Mann has added some investigations carried out in the Laboratory of Experimental Surgery of Indiana University, and published in the *Johns Hopkins Hospital Bulletin* for July. His work was carried out entirely upon anæsthetised animals, and he is particularly careful to confine his deductions to shock occurring during ether anæsthesia; so-called "pure" shock, as seen after accidents, may possibly be due to much more complex factors than shock in the anæsthetised state. In several respects Dr. Mann supports neither Crile nor Yandell Henderson, though it would seem that he diverges from the views of the former more widely than from those of the latter. His researches lead him to the following definite conclusions: 1. It is impossible to reduce the anæsthetised animal to a state of shock by any degree of sensory stimulation, provided all hæmorrhage is prevented and the abdomen is not opened. 2. He has been unable to show that acapnia is a primary factor in the production of shock. 3. Shock is not due to disturbance of the respiration, though it is true that the respiratory centre is more quickly injured than any other vital centre by shock. 4. The vaso-motor centre is not fatigued nor depressed in shock: it is the most resistant of all the vital centres. The peripheral and untraumatised visceral arteries are constricted in shock. 5. Shock is not due to primary failure of the heart, nor to involvement of the cardio-inhibitory or cardio-accelerator mechanism. 6. It is possible to produce the signs of shock by the use of excessive heat or cold. 7. The easiest and most certain method of producing shock is by exposure and trauma of the abdominal viscera; this, judging from the literature, has been the method used by nearly all investigators of shock. 8. Shock produced by exposure and trauma of the abdominal viscera is not due alone to a paralysis of the vaso-motor mechanism of the splanchnic area; for section of the cord or of the splanchnic nerves does not produce shock, and when all the abdominal and thoracic organs are taken from an animal this

"visceral organism" can still be kept alive for many hours, can digest food, excrete urine, &c. Therefore, some other cause than vaso-motor paralysis or inhibition is involved. 9. The cause of shock is the tremendous loss of red cells and fluid from the blood, due to the reaction of the splanchnic area to irritation—an acute inflammation of the peritoneum, due to trauma and exposure to the air and to changes of temperature. The great amount of this loss is apparent when it is taken into consideration that the peritoneum has an extent as great as the entire cutaneous surface of the body. The factors involved in this reaction to irritation are the same as those involved in any other local inflammatory process, and certainly do not involve the nervous system to any greater extent. The profound general effect is due to the actual loss of red cells and fluid through stasis, diapedesis, exudate, and endothelial changes. It is to be noted that some of the classical descriptions of inflammation were made from observations on the exposed omentum and mesentery. In the course of operations in which the abdomen has not been opened a loss of fluid and cells from the blood occurs. But the loss is, except when great areas of subcutaneous tissue have been exposed, comparatively unimportant. 10. Certain accessory factors which help to produce the condition of shock should be mentioned. These are muscular relaxation, decrease in intra-abdominal pressure, and impaired respirations, all of which tend to decrease the amount of blood returned to the heart. The effect of chilling and the use of hot applications should be considered. 11. Degenerative changes in the cells of the central nervous system are the result and not the cause of shock. Identical changes are produced in the nerve cells by hæmorrhage. 12. General anæsthesia of moderate depth prevents painful impulses from affecting the nerve-cells of the central nervous system. Nerve blocking under such conditions is useless so far as the prevention of shock is concerned. 13. A relatively slight decrease in blood-supply may be sufficient to depress markedly the cells of the cerebral cortex. Care should therefore be taken to exclude this factor before ascribing such depression to inhibition. 14. The use of the word "shock" should be avoided, and instead an accurate and detailed description of the patient's condition should be given. If the term be used at all it should be applied to the condition in which, without any grossly discernible hæmorrhage having occurred, the amount of circulatory fluid is greatly diminished on account of stagnation of the blood in the smaller veins and capillaries or by exudation of the fluid and cellular elements of the blood from the same.

THE DISPENSING OF ABNORMAL PRESCRIPTIONS.

IN view of the fact that last year something like 30,000,000 prescriptions were written for insured persons, and probably as many for private patients, it would be surprising if there were not some among them which dispensers found difficult to decipher or which presented perplexing features of one kind or another. Abnormal prescriptions are not as a rule due to any obscure cause, but seeing that there always have been, and always will be, such prescriptions it would be a sound policy if chemists were to adopt some regular plan for dealing with them. When any doubt arises in the mind of a dispenser as to the interpretation and dispensing of a prescription it is obviously his duty to consult the prescriber; but it happens sometimes that this is impracticable or impossible, and then the dispenser is placed in a rather difficult position. The executive of the British Pharmaceutical Conference conceived the idea of suggesting a code of rules for dealing with such difficulties, and at the annual meeting at Chester Mr. E. S. Peck opened a discussion on the subject and submitted a set of rules which might serve as a guide, subject, of course, to the discretion and well-considered decision of the trained pharmacist brought to bear upon each problem in the prescription. Before formulating these suggested rules Mr. Peck distributed a set of questions to practising pharmacists and local associations and received replies from 100 associations and 50 individual chemists; the proposed rules are therefore representative of pharmaceutical opinion throughout the country. In the case of prescriptions containing an illegible ingredient or an illegible quantity it is suggested among other expedients that the dispenser should communicate with the first dispenser, if the prescription has been previously dispensed, or confer with other pharmacists, and that failing any decision that seems to meet the case the pharmacist should decline to dispense the prescription. In the case of an apparently excessive dose the following suggestions are made: "Take into consideration the age, sex, and condition of patient, amount of excess, and frequency of dosage. Dispense generally as written all drugs frequently prescribed above the B.P. maximum, such as liquid ext. ergot, potass. iodid., potass. brom., tinct. bellad., and tinct. scillæ. If drug is a potent or dangerous one, and you know of no circumstance which would indicate necessity for large dosage, dispense the pharmacopœial maximum." In considering this suggestion it must be borne in mind that it is not put forward as a hard-and-fast rule, but merely as a suggested way of dealing with a prescription the writer of which cannot be consulted. Clearly the suggestion could not be adopted in all cases. With reference to the interpretation of prescriptions for percentage solutions it is suggested that it is advisable for the attainment of greater uniformity in practice to interpret percentage solutions as *x* grains or grammes by weight in 100 grains or grammes by weight of the solution or finished product. Regarding incompatible ingredients the proposed rule is that when the incompatible substances form a product which is harmless or unobjectionable they should be dispensed as written, but that in the case of a dangerous incompatibility it would be wiser to decline to dispense the prescription. These suggested rules were agreed to by the Conference, and it was resolved to refer the matter to the executive to take such action as may be deemed advisable. No doubt the executive will adopt the obviously desirable plan of conferring with representative medical practitioners.

LONDON INSURANCE COMMITTEE AND THE UNALLOTTED FUND.

AT a meeting of the London Insurance Committee it was announced that the Medical Benefit Subcommittee recommended that as the Insurance Committee was unable to agree as to the method of distribution to be adopted in respect of the unallotted fund, the Insurance Commissioners should be requested to distribute such moneys among the practitioners on the panel. The recommendation was adopted by 38 votes to 19. Application was made on the morning of July 29th before

Mr. Justice Bailhache by counsel on behalf of Mr. H. Bazett for an interim injunction against the London Insurance Committee to prevent them from acting on the resolution carried at their last meeting, and from disposing of any part of the balance left in the Panel Fund for 1913 until the action brought by Mr. Bazett against the committee shall have been heard and decided. A summons for an injunction was granted to Mr. Justice Bailhache, returnable to-day (Friday, July 31st). Mr. Bazett's action is for a mandamus to compel the committee to "distribute" the unallotted persons, as required by the Acts and Regulations, and for damages for breach of their agreements with him through their failure and definite refusal to do this for 1913.

Professor J. C. Bose, of Calcutta, will give a lecture before the Royal Society of Medicine, on Oct. 30th, on the Modification of Response in Plants under Action of Drugs. Professor Bose is expected to illustrate his lecture by the demonstration of experiments upon sensitive plants.

EPSOM COLLEGE.

Lord Rosebery attended the celebration of Founder's Day at Epsom College on July 25th, that being the last time on which the present headmaster, the Rev. T. N. H. Smith-Pearse, would preside after his 25 years' service. Amongst those on the platform were Sir Henry Morris (treasurer), Sir William S. Church (chairman of the Council), Sir John F. H. Broadbent, Mr. Stanley Boyd, Dr. Charles Caldecott, Dr. F. de Havilland Hall, Dr. Guthrie Rankin, Dr. Septimus P. Sunderland, Dr. Frederick Taylor, Dr. W. Essex Wynter, and members of the teaching staff.

The Headmaster briefly referred in his address to the progress which had been made by the College since his appointment, and touched upon the increase in the number of boys, the honours won in open competition, and the numerous extensions and improvements in the College buildings. He expressed his appreciation of the support which he had always received from the Council of the College, as well as from the staff and other officials at the College, and referred to the deep debt of gratitude which was owing to his wife.

Amongst the honours which have been gained direct from the school since last Founder's Day are a senior scholarship of £60 at Clare College, Cambridge, by A. R. Wood; a classical exhibition at Wadham College, Oxford, by L. V. Ardagh; an open scholarship at St. Mary's Hospital by G. V. Davies; and the Maxwell scholarship at Faraday House, London, by C. H. P. Ewbank. At the recent matriculation examination of the University of London 18 boys out of 23 had passed, six of them being in the first division. Amongst honours gained by former pupils may be mentioned a first class in classical moderations, also an honorary scholarship at Hertford College, Oxford, by H. W. Hodges; a first class in the natural science tripos, also a foundation scholarship at St. John's College, Cambridge, by G. M. Kendall; a second class in final Literæ Humaniores, Oxford, by C. A. Mallam; the Brackenbury scholarship for medicine at St. Bartholomew's Hospital by F. G. A. Smyth; and an open scholarship in arts at St. Bartholomew's Hospital by J. W. S. Dick.

Lord ROSEBERY having given away the chief prizes addressed the boys on the Formation of Character, but before doing so he observed that never, or hardly ever, had he seen the political horizon both in Great Britain and Europe so charged with clouds, pregnant with thunder, as it was that day. He stated that any boy who found after leaving school that he had taken from it no serious result of his studies would decide that he had made a mighty bad bargain of his time, and would find good cause to have remorse for his life. Having defined character, he said that from the very moment we had consciousness the world was constantly carving and chiselling at our characters. The years spent in school were far more important in the formation of character than all the years spent afterwards. The school moments decided whether they were going to be men in the highest sense of the word or whether they were going to pass through life as atoms. There was only one way by which the character of a man at its best showed itself, and that was by his manners. Of course this was not an infallible way, as he had known many excellent people who from shyness had the most execrable manners, and he had also known scoundrels with the most charming and fascinating manners used by them for much the same reason as the web was used by the spider. But those were not the manners he referred to; he meant those simple manly manners which were the index of a straightforward character. They should make their manners worthy of their character, and their character worthy of their manners: the two processes went hand-in-hand. He did not know of any profession in which manners were of so much importance as in the noble profession of medicine. Those who had been attended by a doctor must have realised the difference between the one who came in with a gloomy and austere expression, with bills of mortality condensed in his countenance, enough to take the heart out of the most courageous patient, and the doctor who instinctively seemed to spread a sunny atmosphere through the room the moment he opened the door, giving the patient a feeling of hope and encouragement. If the first doctor was the best in the world and the second was only third rate, he would a thousand times rather have the third-rate doctor with his genial manners, except perhaps for an occasional consultation.

Sir HENRY MORRIS proposed a cordial vote of thanks to Lord Rosebery, which was seconded by Sir WILLIAM CHURCH and carried by acclamation, cheers being called for him by the senior prefect.

ROYAL COMMISSION ON VENEREAL DISEASES.

Sir John Collie at the forty-eighth meeting of the Commission gave the results of some observations he had recently made in connexion with 2176 men referred to him for medical report. The 2176 men were divided into three classes: (1) 1119 whom accident or illness had overtaken; (2) 557 apparently healthy, but required to pass medical examination before entering employment; (3) 500 of the same class as the second division, but who also submitted themselves to the Wassermann test. Of all three divisions 106 were found to be suffering from venereal disease. In the first two divisions, in connexion with which clinical evidence was relied upon, 60, or 3·8 per cent., were found to be infected; in the third class, where the Wassermann test was applied, 46, or 9·2 per cent., were shown to have had syphilis. The 500 cases of those apparently in perfect health (as evidenced by a thorough physical examination) were taken consecutively as they presented themselves for examination, and no selection was made except that working-class people over 21 years of age only were chosen. 103 of the 500 had served in the army or navy, and of these 24, or 18·9 per cent., gave a positive Wassermann reaction; the percentage of positive reactions in the remainder of the 500 was only 6. Sir John Collie stated that the figures probably did not represent the full extent of the existence of the disease, for the men examined were of a somewhat superior artisan class. An interesting feature of the investigation was the fact that the Wassermann test showed a positive reaction in as many as 12, 16, and 19 years, and in one case as late as 29 years after infection, and long after all recollection of the infection had disappeared.

Mr. Frederick J. McCann, surgeon to the Samaritan Free Hospital for Women, said that it was of the utmost importance that syphilis and gonorrhœa should be regarded as common female ailments, for which the same facilities for treatment should be available as for other female ailments without any special stigma being attached to them. If proper facilities for in-patient and out-patient treatment were provided the special aspects of these diseases would to a large extent disappear. Systematic instruction in the early local signs of syphilis and the signs and symptoms of gonorrhœa was much required; this instruction should be given at the special hospitals for women and in the gynæcological departments of the general hospitals. It was essential that

gonorrhœa should be regarded as a serious disease in both sexes, especially in women, and that prompt and effectual treatment was required. The medical profession could do much in this respect by impressing upon patients the gravity of the disease and the necessity for curative treatment.

Dr. A. K. Chalmers, medical officer of health of Glasgow, gave supplementary evidence at the forty-ninth meeting of the Commission with reference to the experience of the health committee of the corporation of Glasgow. He stated that ophthalmia neonatorum was made compulsorily notifiable in Glasgow in 1911, and that in the beginning an attempt was made to supervise the cases at the homes. It was, however, soon apparent that there was definite need for provision being made for hospital treatment. Arrangements had accordingly been made for this treatment, and it had been necessary in some cases to provide also for the reception into hospital of the mother. Their experience had shown that a proportion of children affected with ophthalmia neonatorum also suffered from congenital syphilis, and that the resultant defects in vision were greatest when the diseases were concurrent. In the period ending December, 1913, of 463 children suffering from ophthalmia neonatorum 13·6 per cent. were found also to be syphilitic. With regard to syphilis generally, the corporation of Glasgow had made arrangements for placing opportunities of obtaining a Wassermann test at the disposal of any practitioners who desired it; and in view of the information required with any specimen sent for examination it had been arranged to pay a fee of 2*s.* 6*d.* Between September, 1913, and June 25th last 953 equipments for the purposes of obtaining a Wassermann test had been issued to practitioners by the corporation. Dr. Chalmers was of opinion that no form of compulsory notification of venereal disease, whether for any group of persons or of cases, would effect its object. His view was that the public required not compulsion but education, and he thought that the issue of an authoritative statement showing the danger to life in after years of syphilis contracted at an earlier period and of the disastrous effect on children would help to form an educated public opinion which would at least induce those who might contract the disease to seek effective treatment, even if it failed in the ultimate purpose of inducing them to avoid exposure to it. The main problem at the present time was the organisation of means of diagnosis and treatment.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

First Report on Tuberculosis and the Administration of Sanatorium Benefit in the County of Kent.—The county medical officer of health of Kent, Dr. A. Greenwood, has presented to his county council and to the Kent Insurance Committee a separate report with this title, covering some 200 pages, and well illustrated by maps and diagrams. It is permissible, on theoretic grounds, to regret the separation of one disease in this way from the many other health matters which fall within the province of a medical officer of health, and particularly where the disease is tuberculosis. It is natural to regard the introduction of the vast national schemes of the last two years as the beginning of a new era, but from the time of the earliest medical officer of health efforts have been made, and with much success, to attack tuberculosis by ascertaining and dealing with the conditions which have been associated with its prevalence, and to expedite the steady fall in its fatality which has been brought about by healthier conditions of living and social betterment. It is to be anticipated that the new organisation dealt with in this volume will be fruitful of good in various ways, but its effect can never be separated from a host of concurrent factors for the reduction of tuberculosis prevalence and mortality which are operating at the same time, and which in some instances involve administrative work far outside the scope of such a volume as this. To do Dr. Greenwood justice many passages in the volume show that these considerations have been fully in his mind, and the case for the issue of the separate volume on practical grounds is very strong. The committees of the county council and for insurance require for their administration to have just such a report and record as Dr Greenwood has put before them, and the record is creditable to both bodies. The organisation so far undertaken has evidently been well carried out, and the large sums of money made available for sanatorium benefit and special tuberculosis treatment are being judiciously expended. About 300 cases had received treatment in different residential institutions by arrangement up to the end of the year; there is as yet no county sanatorium, but a site of 54 acres has been obtained near Lenham, on the Maidstone to Ashford branch of the South-Eastern and Chatham Railway, and plans have been prepared and approved by the Local Government Board for the erection there of a sanatorium of 100 beds, with necessary adjuncts. It is proposed also to retain 75 beds for advanced cases, at a cost not exceeding 30*s.* per head per week, at existing institutions in the county, though difficulty has arisen owing to the small number of isolation hospitals at which satisfactory accommodation for the purpose can be obtained. The principal immediate progress which has been made is with the dispensary system; 18 dispensary centres have been established in different parts of the county, together with some associated calling stations. The county authorities have appointed four whole-time tuberculosis officers, at salaries of £500 with travelling and subsistence allowance, and in addition have obtained the services of two part-time local tuberculosis officers at Sheerness and at Beckenham. Five whole-time "tuberculosis nurses" have also been appointed, who attend the dispensaries and undertake home visiting. Every effort is to be made by them to secure the attendance at the dispensary of all other occupants, whether they seem ill or not, of the house in which a patient has been visited. It may be noted that nurses are instructed, where the patient is receiving domiciliary treatment from a panel doctor, to ascertain "what orders have been given by the doctor before trying to find out whether they have been carried out." The dispensaries, which are described in detail, are attended by dispensary clerks, the importance of whose services may in part be gathered by the pages of specimen forms, cards, and case papers which are given in the report. These give a good illustration of the work which has been involved and the complexity of the organisation, particularly in regard to the formalities to be observed when questions such as the provision of "nourishment ancillary to treatment" have to be dealt with. Most of the dispensaries were not established and at work until after the beginning of the year, and the figures as to their use in 1913 would thus be of little value, but their records in future reports of this series will be looked forward to with interest. The report should be in the hands of practitioners generally throughout the county, and will interest the wider medical public which is concerned with similar questions of organisation.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 97 English and Welsh towns with populations exceeding 50,000 persons at the last Census and whose aggregate population at the middle of this year is estimated at 18,120,059 persons, 8759 births and 3928 deaths were registered during the week ended Saturday, July 25th. The annual rate of mortality in these towns, which had been 12·7, 11·5, and 11·6 per 1000 in the three preceding weeks, declined to 11·3 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 13·8, or 0·7 per 1000 above the rate recorded in London during the same period. Among the several towns the death-rate last week ranged from 4·5 in Bath, 5·5 in Leyton, in Bournemouth, and in Devonport, 5·9 in Ealing and in Hornsey, and 6·1 in Wimbledon and in Ipswich, to 17·2 in Preston, 17·8 in Bootle, 19·0 in Lincoln, 21·9 in Middlesbrough, and 22·0 in Stockton-on-Tees.

The 3928 deaths from all causes were 90 fewer than the number in the previous week, and included 478 which were referred to the principal epidemic diseases, against 394 and 406 in the two preceding weeks. Of these 478 deaths, 209 resulted from infantile diarrhœal diseases, 98 from measles, 83 from whooping-cough, 46 from diphtheria, 28 from scarlet fever, and 14 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·4 per 1000, or 0·2 above the rate in the previous week. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 116, 112, and 151 in the three preceding weeks, further rose to 209

last week; of this number 34 were registered in London, 22 in Sheffield, 16 in Liverpool, 15 in Birmingham, 11 in Hull, 10 in Leeds, 8 in Manchester, and 7 in West Ham, in Bootle, and in Newcastle-on-Tyne. The deaths referred to measles, which had been 130, 139, and 110 in the three preceding weeks, further declined to 98 last week, and included 31 in London, 13 in Liverpool, 9 in Leeds, 9 in Sheffield, 5 in Birmingham, and 4 in Oldham. The fatal cases of whooping-cough, which had been 95, 77, and 73 in the three preceding weeks, rose to 83 last week, of which 19 occurred in London, 10 in Liverpool, 6 in Manchester, 5 in Salford, 4 in Leeds, 3 in Burnley, and 3 in Birmingham. The deaths attributed to diphtheria, which had been 64, 30, and 34 in the three preceding weeks, further rose to 46 last week, and included 14 in London and 2 each in East Ham, Stoke-on-Trent, Nottingham, Sheffield, and Darlington. The deaths referred to scarlet fever, which had been 23, 22, and 26 in the three preceding weeks, further rose to 28 last week, of which 4 occurred in London, 4 in Birmingham, 4 in Liverpool, 2 in Manchester, and 2 in Preston. The fatal cases of enteric fever, which had been 16, 13, and 12 in the three preceding weeks, were 14 last week, of which 2 were registered in London, 2 in Portsmouth, and 2 in Blackburn.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily increased from 2862 to 3126 in the ten preceding weeks, further rose to 3135 on Saturday last; 414 new cases were admitted during the week, against 442, 414, and 430 in the three preceding weeks. These hospitals also contained on Saturday last 1075 cases of diphtheria, 189 of whooping-cough, 33 of enteric fever, and 27 of measles, but not one of small-pox. The 922 deaths from all causes in London were 99 below the number in the previous week, and corresponded to an annual death-rate of 10·6 per 1000. The deaths referred to diseases of the respiratory system, which had been 127, 111, and 128 in the three preceding weeks, declined to 86 in the week under notice, and were 29 below the number registered in the corresponding week of last year.

Of the 3928 deaths from all causes in the 97 towns, 169 resulted from different forms of violence and 316 were the subject of coroners' inquests, while 1231 occurred in public institutions. The causes of 30, or 0·8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Sheffield, Leeds, Bristol, Bradford, Hull, Newcastle-on-Tyne, and in 74 other smaller towns. Of the 30 uncertified causes of death, 7 were registered in Birmingham, 4 in Liverpool, and 2 each in London, Barrow, Huddersfield, South Shields, and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,293,200 persons at the middle of this year, 1219 births and 592 deaths were registered during the week ended Saturday, July 25th. The annual rate of mortality in these towns, which had been 14·1, 13·6, and 12·7 per 1000 in the three preceding weeks, rose to 13·5 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 15·5, or 1·7 per 1000 above the rate recorded in the 97 large English towns during the same period. Among the several towns the death-rate ranged from 4·4 in Kilmarnock, 6·3 in Kirkcaldy, and 9·4 in Ayr, to 14·5 in Coatbridge, 16·0 in Aberdeen, and 18·1 in Greenock.

The 592 deaths from all causes were 33 in excess of the number in the previous week, and included 50 which were referred to the principal epidemic diseases, against 41 and 58 in the two preceding weeks. Of these 50 deaths, 20 resulted from infantile diarrhœal diseases, 9 from whooping-cough, 8 from measles, 8 from scarlet fever, 3 from diphtheria, and 2 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·1, against 1·4 per 1000 in the 97 large English towns. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 13, 10, and 18 in the three preceding weeks, further rose to 20 last week, of which 11 were registered in Glasgow and 2 in Edinburgh. The deaths referred to whooping-cough, which had been 12, 13, and 15 in the three preceding weeks, fell to 9 last week, of which 7 occurred in Glasgow. The fatal cases of measles, which had increased from 7 to 12 in the four preceding weeks, declined to 8 last week, and comprised 3 in Glasgow, 3 in Dundee, and 2 in Coatbridge. The deaths attributed to scarlet fever, which had been 1, 3, and 7 in the three preceding weeks, were 8 last week, of which 3 were recorded in Glasgow and 3 in Dundee. The 3 deaths referred to diphtheria were slightly below the average in the three preceding weeks, and showed no excess in any of the towns. The 2 fatal cases of enteric fever were registered in Glasgow.

The deaths referred to diseases of the respiratory system, which had steadily declined from 99 to 51 in the seven preceding weeks, rose to 70 in the week under notice; 27 deaths resulted from various forms of violence, against 26 and 21 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,205,280 persons at the middle of this year, 604 births and 335 deaths were registered during the week ended Saturday, July 25th. The annual rate of mortality in these towns, which had been 16·2, 15·9, and 16·1 per 1000 in the three preceding weeks, fell to 14·5 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 19·0 per 1000, against corresponding rates of 13·8 and 15·5 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 15·3 in Dublin (against 10·6 in London and 14·3 in Glasgow), 14·5 in Belfast, 13·6 in Cork, 15·2 in Londonderry, 12·2 in Limerick, and 13·3 in Waterford, while in the 21 smaller towns the mean rate was 13·7 per 1000.

The 335 deaths from all causes were 36 in excess of the number in the previous week, and included 38 which were referred to the principal epidemic diseases, against 38 and 43 in the two preceding weeks. Of these 38 deaths, 21 resulted from infantile diarrhœal diseases, 8 from measles, 4 from whooping-cough, 2 from scarlet fever, 2 from enteric fever, and 1 from diphtheria, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 1·6, against 1·4 and 1·1 per 1000 in the English and Scotch towns respectively. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 14, 13, and 14 in the three preceding weeks, further rose to 21 last week, of which 8 were recorded in Belfast, 6 in Dublin, and 3 in Cork. The deaths referred to measles, which had been 15, 10, and 14 in the three preceding weeks, fell to 8 last week, and comprised 5 in Sligo, 2 in Dublin, and 1 in Belfast. The fatal cases of whooping-cough, which had been 10, 5, and 6 in the three preceding weeks, fell to 4 last week, of which 2 were registered in Belfast and 2 in Cork. The 2 deaths attributed to scarlet fever were recorded in Belfast, and the fatal cases of enteric fever and diphtheria in Dublin. In addition to the above deaths a fatal case of typhus was registered in Belfast.

The deaths referred to diseases of the respiratory system, which had been 41, 53, and 41 in the three preceding weeks, further fell to 34 in the week under notice. Of the 335 deaths from all causes, 103, or 31 per cent., occurred in public institutions and 6 resulted from various forms of violence. The causes of 11, or 3·3 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 97 English towns the proportion of uncertified causes last week did not exceed 0·8 per cent.

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

THE undermentioned Majors are placed on retired pay (dated July 28th, 1914): Stephen W. Sweetnam and Arthur E. Milner.

Captain James A. B. Sim resigns his commission (dated July 25th, 1914).

Captain Philip C. Field is seconded for service with the Egyptian Army (dated July 1st, 1914).

The undermentioned Lieutenants to be Captains (dated July 27th, 1914): Benjamin Biggar, James D. Kidd, Charles M. Finny, Gordon Wilson, William S. R. Steven, Edward G. S. Cane, William A. Frost, William T. Graham, Francis A. Robinson, Douglas Reynolds, John S. Levack, Pierce M. J. Brett, Patrick Hayes, Thomas A. Weston, Walter Bisset, Tom C. R. Archer, William L. E. Fretz, and Charles D. K. Seaver.

Supernumerary Lieutenant Bernard Woodhouse is restored to the establishment (dated July 25th, 1914).

Surgeon-General R. W. Ford, D.S.O., has taken up duty as Deputy Director of Medical Services on the Headquarters Staff of the Northern Command.

Lieutenant-Colonel W. T. Swan has been selected for appointment as Assistant Director of Medical Services to the Western Command. Lieutenant-Colonel J. S. Davidson has been granted six months' general leave of absence home from Agra Cantonment. Lieutenant-Colonel S. H. Withers has been appointed Senior Medical Officer at Dagshai. Lieutenant-Colonel A. P. Blenkinsop has been granted four months' combined leave of absence home from India. Lieutenant-Colonel F. S. Le Quesne, V.C., has been placed under orders for service abroad. Lieutenant-Colonel J. E. Brogden has arrived home on leave of absence from Imtarfa, Malta.

Lieutenant-Colonel T. B. Beach has been appointed to hold charge of the Military Hospital at Alexandria.

Major H. O. B. Browne-Mason has been selected for appointment as Officiating Assistant Director of Medical Services at Army Headquarters, Simla, during the absence on leave of Lieutenant-Colonel A. P. Blenkinsop. Major A. H. Waring and Major L. Humphry have been placed under orders for service abroad. Major V. J. Crawford has joined at Hilsea. Major E. W. Siberry has been appointed for duty to the Central Recruiting Depôt in the London District. Major E. P. Connolly has been transferred from Rawal Pindi to Murree Cantonment. Major L. M. Purser has been appointed to the Military Hospital at Ranikhet. Major R. B. Ainsworth has taken up duty at Headquarters, Tidworth, as Specialist Sanitary Officer. Major H. R. Bateman has been appointed Specialist in Bacteriology to the Military Hospital at Shorncliffe. Major M. C. Beatty has joined at Devonport. Major J. G. Gill has arrived home for duty from Rangoon. Major A. Chopping has been appointed Registrar to the Royal Victoria Hospital at Netley. Major P. H. Henderson has been appointed to hold charge of the Reception Station at Portsmouth. Major J. F. M. Kelly has been appointed to the Military Hospital at Colchester. Major M. F. Foulds has taken up duty in the Belfast District as Specialist in Operative Surgery. Major D. Harvey has been appointed Clinical Pathologist at the Royal Army Medical College, Grosvenor-road. Major E. E. Powell has been appointed to the staff of the Military Hospital at Ambala Cantonment. Major J. H. R. Winder has been appointed to hold Medical Charge of Families, Wellington Lines, Aldershot. Major A. E. Smithson has been appointed to hold charge of the Royal Infirmary and Detention Barracks at Arbor Hill, Dublin. Major A. H. O. Young has been appointed Staff Surgeon at Jullundur Cantonment. An exchange on the roster for service abroad has been approved between Major G. M. Goldsmith and Major R. B. Ainsworth; the latter officer will now remain on the home establishment.

Captain D. P. Watson has been appointed Clinical Pathologist at the Curragh. Captain S. G. Walker has been granted four months' general leave of absence from Cawnpore Cantonment. Captain W. R. O'Farrell has arrived home on leave of absence from Egypt. Captain G. G. Tabuteau has been appointed Specialist in Operative Surgery to the Military Hospital at Cork. Captain C. M. Rigby has been appointed embarkation medical officer at Bombay. Captain C. R. Sylvester Bradley has taken up duty as Adjutant of the Royal Army Medical Corps School of Instruction at Exeter. Captain C. J. Wyatt has arrived home for duty from West Africa. Captain C. A. T. Conyngham has been transferred from the Fifth (Mhow) Division to the Ninth (Secunderabad) Division. The following Captains have been placed under orders for service abroad: P. J. Hanafin, R. T. Collins, A. L. Otway, and R. B. Hole. Captain V. H. Symons has been appointed to hold charge of the Military Hospital at Seaforth. Captain M. B. H. Ritchie has been placed under orders to join the Royal Army Medical College for the next courses of instruction for promotion to the rank of Major. Captain J. H. Duguid has been transferred from the Military Hospital at Secunderabad to Bellary Cantonment. Captain P. S. Stewart has arrived home for duty from Malta. Captain C. H. Turner has been appointed Specialist in Operative Surgery to the King George V. Military Hospital at Dublin. Captain M. White has joined at Shwebo. Captain E. C. Phelan has arrived home for duty from Barrackpore Cantonment. Captain E. D. Caddell has been transferred from the Dublin District to the Military Hospital at Chatham. Captain C. Robb has been appointed to the Public Health Department in Egypt. Captain A. A. Sutcliffe has taken up duty at the Military Hospital, Chester. Captain J. R. Foster has been transferred from Kilbride Camp to the Military Hospital at Dublin. Captain A. M. Rose has been appointed to hold charge of the Reception Station at Longmoor Camp.

Lieutenant P. Hayes has been appointed Specialist in Dermatology and Venereal Diseases to the Mhow Division. Lieutenant J. M. Elliott has been transferred from Rawal Pindi to Baracao. Lieutenant B. H. H. Spence has been appointed for duty with the Egyptian Army. Lieutenant F. C. Cowtan has been placed under orders for service abroad. Lieutenant E. C. Deane has been transferred from the Military Hospital at Bareilly to Meerut Cantonment. Lieutenant W. McNaughtan has taken up duty at Karachi on transfer from the Military Hospital at Quetta Cantonment. Lieutenant D. T. M. Large has been appointed to the Mhow Division.

INDIAN MEDICAL SERVICE.

Colonel A. O. Evans has been granted 13 months' combined leave of absence home. The services of Colonel R. W. S. Lyons have been placed permanently at the disposal of the Government of Bombay.

Lieutenant-Colonel C. R. Pearce has been appointed to the Bacteriological Department for duty at the Pasteur Institute in Burma. Lieutenant-Colonel H. E. Drake-Brockman has been granted six months' combined leave of absence home from India. Lieutenant-Colonel R. G. Turner has been selected for appointment as Civil Surgeon at Lucknow. Lieutenant-Colonel C. C. Manifold has arrived home from India.

Major J. R. J. Tyrrell has been appointed Agency Surgeon at Bundelkhand. Major A. Fenton, civil surgeon at Rangoon, has taken over charge of the duties of Superintendent of the General Hospital at Rangoon. The services of Major M. Corry have been placed temporarily at the disposal of the Chief Commissioner at Delhi. Major D. McCay has been granted four months' extension of leave of absence home from India. Major W. V. Coppinger has been appointed to officiate as Ophthalmic Surgeon to the College Hospital, Calcutta, *pro tem.* The services of Major M. MacKelvie have been placed permanently at the disposal of the Government of Bengal Presidency. Major S. R. Christophers has been appointed to officiate as Director of the Central Research Institute at Kasauli. Major J. C. Robertson, C.I.E., has been granted two months' privilege leave of absence home from India.

Captain W. F. Brayne has been appointed to officiate as Deputy Sanitary Commissioner, Burma. The services of Captain A. F. Babonau have been placed at the disposal of the Government of Assam for employment as Civil Surgeon in the Naga Hills District. The services of Captain C. H. Cross have been placed temporarily at the disposal of the Government of Madras Presidency. An exchange has been approved between Captain F. R. Coppinger, of the Indian Medical Service, and Captain J. B. Hanafin, of the Royal Army Medical Corps. Captain A. N. Dickson has been appointed Agency Surgeon of the Second Class at Muscat. Captain J. H. Murray has been appointed Senior Medical Officer at Port Blair. Captain W. D. Keyworth has joined at Poona. The services of Captain J. T. McGillivray have been placed temporarily at the disposal of the Government of Burma. Captain G. G. James has been appointed Assistant Chief Quarantine Medical Officer in the Persian Gulf. Captain P. K. Gilroy has been appointed officiating Medical Officer to the 12th Pioneers. Captain J. H. Horne has been appointed on special duty in connexion with the prevention of malarial fevers in Madras Presidency. Captain A. J. Lee has been appointed Specialist in Electrical Science to the Poona Division. Captain R. H. Bott has taken up duty at the Government Medical College, Lahore. Captain N. S. Simpson has been appointed to the Lucknow District. Captain C. H. Smith has been appointed Specialist in Advanced Operative Surgery to the Peshawar Division. Captain H. W. Acton has taken up duty at the Central Research Institute, Kasauli Cantonment. Captain G. S. Husband has joined at Lahore. Captain K. S. Singh has been appointed to the Amritsar District. Captain V. B. Green-Armytage has been appointed Resident Surgeon to the Eden Hospital at Calcutta. Captain A. J. H. Russell has been appointed Professor of Hygiene at the Government Medical College, Madras.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned, from the Belfast University Contingent, Officers Training Corps, to be Lieutenants (on probation) (dated July 7th, 1914): Cadet Corporal William Bryars and Cadet George Chesney.

Lieutenant Charles R. McIntosh is confirmed in his rank.

TERRITORIAL FORCE.

Royal Army Medical Corps.

2nd Home Counties Field Ambulance: Captain William E. Alston, from attachment to Units other than Medical Units, to be Captain (dated June 20th, 1914).

East Anglian Clearing Hospital: Major James S. Warrack, from attachment to Units other than Medical Units, to be Major (dated June 25th, 1914).

Unattached List for the Territorial Force.—Lieutenant John R. Sutherland resigns his commission (dated July 29th, 1914).

Sanitary Officers.—Major John Robertson resigns his commission (dated July 25th, 1914).

Attached to Units other than Medical Units.—James Alwin Colville Scott to be Lieutenant (dated June 11th, 1914).

Supernumerary for service with the Officers Training Corps.—Lieutenant Thomas B. Layton, serving with the University of London Contingent, Senior Division, Officers Training Corps, to be Captain (dated July 3rd, 1914).

TERRITORIAL FORCE RESERVE.

Royal Army Medical Corps.

Captain Francis R. M. Heggs, from the Notts and Derby Mounted Brigade Field Ambulance, to be Captain (dated July 25th, 1914).

THE TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned officers of the Territorial Force (R.A.M.C.):—Attached to Units other than Medical Units: Major John Robinson Harper, attached to the Royal North Devon

(Hussars) Yeomanry. Major William Sinclair, attached to the City of Aberdeen (Fortress) Engineers, Royal Engineers. Major Frederick Lace, attached to the 4th Battalion, Prince Albert's (Somerset Light Infantry). Major Thomas Holt, attached to the 6th Battalion, The Lancashire Fusiliers. Major William Mabsom Gabriel, attached to the 6th Battalion, The Duke of Wellington's (West Riding Regiment). Major John Boyd Jamieson, attached to the Lowland Divisional Transport and Supply Column, Army Service Corps.

THE CONVALESCENT HOME AT OSBORNE.

The King has approved of the appointment of the undermentioned to the Consulting Staff of the Convalescent Home for Officers of H.M. Navy and Army, Osborne, Isle of Wight, as from July 28th, 1914:—Sir John Rose Bradford, K.C.M.G., F.R.S., Lieutenant-Colonel E. M. Pilcher, D.S.O., R.A.M.C., and Lieutenant-Colonel O. L. Robinson, R.A.M.C.

BULLETINS OF THE NAVAL MEDICAL ASSOCIATION OF JAPAN.

Nos. 7 and 8 of these bulletins, just to hand, although printed for the most part in the Japanese character, contain a brief précis of the contents in English. In No. 7 Surgeon-Inspector S. Oishi describes two cases of nerve sequelæ following salvarsan injection with symptoms of tumour in the pons of the cerebellum, and Fleet-Surgeon K. Momose details some investigations of the antigen action of fat-free tubercle bacillus, the experiments being of theoretical interest so far as they prove that the antigen action of tubercle bacilli is not destroyed by treatment with alkali previous to the chloroform; but further researches, it is hoped, will point out how this result may be turned to practical use, as, for example, in the sero-diagnosis of tuberculosis. Among the interesting contents of No. 8 are some statistics on spinal and sacral anæsthesia at Kure Naval Hospital by Fleet-Surgeon H. Yamamoto. In most cases by-effects were absent.

THE AUSTRO-SERVIAN WAR.

Baron Louis de Rothschild and his brother, Alfons Eugen, have given £4000 to the Red Cross Fund.

CHOLERA IN THE NEAR EAST.

(FROM THE BRITISH DELEGATE TO THE CONSTANTINOPLE BOARD OF HEALTH.)

A PROLONGED absence from Constantinople has prevented me from continuing the record of cholera in the Near East since my last letter on this subject, which appeared in THE LANCET of Feb. 7th. That letter, written many weeks earlier, brought the records down to the month of November last.

Cholera in Constantinople and Neighbourhood.

It will be recalled that throughout October only occasional sporadic cases of cholera occurred in the Turkish capital. In November and December the cases became more frequent. The following figures, in continuation of those contained in my former letter, show the further course of the outbreak:—

From Oct.	27th	to Nov.	2nd	...	2	cases,	0	deaths.
,, Nov.	3rd	,, ,,	16th	...	11	,,	5	,,
,, ,,	17th	,, ,,	23rd	...	5*	,,	5	,,
,, ,,	24th	,, ,,	30th	...	5†	,,	3	,,
,, Dec.	1st	,, Dec.	7th	...	45	,,	17	,,
,, ,,	8th	,, ,,	14th	...	47	,,	15	,,
,, ,,	15th	,, ,,	21st	...	18	,,	9	,,
,, ,,	22nd	,, ,,	28th	...	2	,,	0	,,
,, ,,	29th	,, Jan.	4th	...	5	,,	1	death.
,, Jan.	5th	,, ,,	11th	...	6	,,	4	deaths.
,, ,,	12th	,, ,,	18th	...	5	,,	4	,,
,, ,,	19th	,, ,,	25th	...	9	,,	2	,,
,, ,,	26th	,, Feb.	1st	...	4	,,	2	,,
,, Feb.	2nd	,, ,,	8th	...	1	case,	1	death.
,, ,,	9th	,, ,,	15th	...	1	,,	0	,,

* And 5 suspected cases. † And 3 suspected cases.

No subsequent cases occurred for some time, and Constantinople was declared cholera free on Feb. 24th. The outbreak had lasted from August, 1913, to February, 1914, but during those six months only 217 cases of disease, with 95 deaths, were registered. No doubt these figures were below the truth, but in any case the outbreak was a mild one throughout, and can scarcely be said to have taken on the proportions of an epidemic at any time. A little later, in March, two or three isolated cases of cholera were seen in the capital, but the port was not declared again "infected."

Cholera on the Shores of the Marmara and the Dardanelles.

Throughout last autumn and winter there was continual movement of masses of persons—either troops returning to their quarters after the war or of emigrants from the lost provinces—across the sea of Marmara and the Dardanelles. From time to time cholera prevailed among these persons, but here also the disease appears to have been mainly of a sporadic character. In view of all the circumstances, it is a remarkable and fortunate fact that it did not take on the characters of a disastrous epidemic, and this would seem to confirm the view I ventured to put forward in an earlier letter—that the cholera prevalence in this part of the world during the past two years and more has been due to a relatively non-malignant and inactive virus; that the virus has acquired these qualities during the many years that have elapsed since it reached Europe from its epidemic home in India; and that if this prevalence had been brought about by a fresh importation from India there would have been a very different tale to tell. At Rodosto, on the Marmara, 12 cases of cholera with 8 deaths occurred late in September and early in October. Some isolated cases were seen in October at Kalémi, in the Marmara islands, and at Silivri, between Rodosto and the capital, and at Derinjé on the Gulf of Ismidt. Later, further cases were seen at Rodosto and at Callicratia, on the Marmara. At Gallipoli and Boulair (the fortified isthmus of the Gallipoli peninsula) cholera caused a considerable mortality in October last. At one time 40 cases were simultaneously under treatment in the military hospital at Boulair. Later on, in January, and again in April and May, some sporadic cases occurred in Gallipoli and at Tchanak Kaleh, in the Dardanelles. They seem to have been confined to the troops and their number was small throughout. Typhus fever, indeed, has caused a far higher mortality among the returning troops and emigrants than has cholera.

Cholera Elsewhere in Turkey.

In March, April, and May cholera prevailed to some extent in the garrisons of Adrianople and Kirk Kilissé. Something over 100 cases of the disease were officially admitted to have occurred in Adrianople alone. The outbreak here appears to have come to an end about the middle of May. In Smyrna only occasional imported cases were seen after Oct. 12th (the date down to which the records were brought in my last letter). At Aivali, on the coast of Asia Minor, north of Smyrna, 9 cases of cholera, with 4 deaths, were registered in January. Imported cases of the disease have also been reported from time to time from Trebizond, Kavak (at the northern end of the Bosphorus), and elsewhere.

Cholera in Roumania.

Cholera continued to prevail in different parts of Roumania until early in December, as shown by the following figures (in continuation of the table published in my last letter):—

From Oct.	6th	to Oct.	14th	... ...	313	cases.	
,, ,,	14th	,, ,,	21st	... ...	293	,,	
,, ,,	21st	,, ,,	29th	... ...	43	,,	
,, ,,	29th	,, Nov.	5th	... ...	10	,,	
,, Nov.	5th	,, ,,	14th	... ...	?	,,	
,, ,,	14th	,, ,,	22nd	... ...	16	,,	
,, ,,	22nd	,, ,,	29th	... ...	0	,,	
,, ,,	30th	,, Dec.	7th	... ...	2	,,	

The last cases of cholera in Roumanian ports occurred respectively in Balatz on Oct. 2nd, in Braila on Oct. 8th, and in Kustendje on Oct. 12th. Since the above-named dates Roumania appears to have been entirely free from cholera.

Cholera in Austria-Hungary.

The cholera infection lingered on in different portions of the Austro-Hungarian empire until the middle of December. In Austria proper, where it will be recalled 25 cases with 13 deaths occurred before the end of September, no further cases were seen after that date. In Hungary the epidemic was more severe and lasted longer. Through October the weekly bulletins were not received here, but it was announced that the following places had been declared infected with cholera: Illyed, in the county of Krassi-Szörény; Gerebenz, in the county of Temes; and Unglovasd, in the county of Ung. On Oct. 25th a case of cholera was seen on a Danube steamer at Budapest, but no other cases appear to have

occurred here. Later the following weekly bulletins for all Hungary were issued:—

From Nov.	2nd	to Nov.	8th	...	51	cases,	22	deaths.
,, ,,	9th	,, ,,	15th	...	?	,,	?	,,
,, ,,	16th	,, ,,	22nd	...	29	,,	17	,,
,, ,,	23rd	,, ,,	29th	...	11	,,	5	,,
,, ,,	30th	,, Dec.	6th	...	4	,,	7	,,
,, Dec.	7th	,, ,,	13th	...	5	,,	2	,,

On Dec. 18th a labourer in a factory at Uzverbasz, in the county of Bacs-Bodrog, was attacked with the disease, and this appears to have been the last case of cholera in Hungary, or indeed in the whole empire, and on Dec. 29th the country was officially declared cholera-free.

For Croatia-Slavonia the following figures were published:

From Oct.	6th	to Oct.	12th	...	62	cases,	22	deaths.
,, ,,	12th	,, ,,	20th	...	57	,,	26	,,
,, ,,	21st	,, ,,	27th	...	12	,,	6	,,
,, ,,	27th	,, Nov.	3rd	...	16	,,	9	,,
,, Nov.	3rd	,, ,,	10th	...	20	,,	7	,,
,, ,,	10th	,, ,,	17th	...	3	,,	2	,,
,, ,,	17th	,, ,,	25th	...	11	,,	6	,,

The last case of cholera in Croatia-Slavonia appears to have occurred on Nov. 27th, and the provinces were declared free from the disease on Dec. 12th.

In Bosnia-Herzegovina cases of cholera in small numbers occurred during October and November, at Sjekovac, Zenica, Kostajnica, Bosnich-Brod, and some other places. By the end of November the outbreak was almost extinct, but at Zepcé a few cases of cholera were seen before Dec. 18th.

It will be remarked that this epidemic covered a very considerable portion of Austria-Hungary, but it was nowhere very severe. The districts most affected were the Hungarian counties of Bacs-Bodrog and Torontal bordering on the river Drave and the Slavonian provinces lying between the Save and the Drave.

Cholera in Russia.

Last year's cholera epidemic in Russia was a mild one and was confined mainly to the southern governments. The following weekly bulletins were issued:—

From August	20th	to August	30th	...	16	cases,	5	deaths.
,, ,,	31st	,, Sept.	6th	...	?	,,	?	,,
,, Sept.	7th	,, ,,	13th	...	34	,,	15	,,
,, ,,	14th	,, ,,	20th	...	48	,,	24	,,
,, ,,	21st	,, ,,	27th	...	41	,,	20	,,
,, ,,	28th	,, Oct.	4th	...	42	,,	15	,,
,, Oct.	5th	,, ,,	11th	...	27	,,	9	,,
,, ,,	12th	,, ,,	18th	...	23	,,	4	,,
,, ,,	19th	,, ,,	25th	...	17	,,	6	,,
,, ,,	26th	,, Nov.	8th	...	14	,,	5	,,

(All the above dates are according to the New Style.)

The total number of cases in the whole empire was placed at 269 and that of deaths at 120. The only provinces affected were the governments of Kherson, Taurida, Bessarabia, Kief, Poltava, and Ekaterinoslav. Of these the government and town of Kherson suffered most; 152 cases with 69 deaths were registered here.

The epidemic in Russia came to an end in November; but quite recently (on July 9th) a fatal case of cholera was reported from Kherson, and a revival of the outbreak there may be anticipated; but there is every reason to believe that in Russia, as in Turkey, Austria-Hungary, and Roumania, the cholera infection has lost its virulence, and to hope that if epidemics do recur here they will be essentially of a mild and non-malignant character.

Typhus Fever in Turkey.

As stated above, typhus fever has caused more serious ravages among troops and emigrants in this country during recent months than has the cholera. The returns are exceedingly imperfect, and before the month of March no figures were published. Since then the following returns for the whole empire have been issued. During March 278 cases with 98 deaths were registered, of which 189 cases and 82 deaths occurred among troops and 89 cases with 16 deaths in the general population. In April the cases rose to 509 and the deaths to 110; of these, 321 cases and 84 deaths were ascribed to troops and 186 cases with 28 deaths to the general population. In May there were 335 cases with 99 deaths, of which 251 cases and 55 deaths occurred among troops and 84 cases with 44 deaths in the general population. The tables include places as widely apart as Constantinople, Adrianople, Adalia, Angora, Jerusalem, Aintab, Gallipoli, Sivas, Van, Brousa, Erzeroum, Beirut, and many others. There is no question that the published figures are considerably below the truth, for in some instances—e.g., Gallipoli—where separate returns have been received, these have greatly exceeded the total recorded in the tables. At the same time, there is no reason to suppose that the disease has anywhere caused a very violent epidemic, and there has been nothing to compare with the appalling mortality that occurred in the Turkish capital after the Russo-Turkish war in 1878.

Constantinople, July 13th.

Home and Foreign Notes.

(FROM OUR OWN CORRESPONDENTS.)

LIVERPOOL.

A Ward for Tropical Diseases at the Royal Infirmary.

The "Sir Alfred Jones Tropical Ward" at the Royal Infirmary was opened on July 23rd by the Countess of Derby. There were also present the Earl of Derby, Sir Thomas Barlow, Sir Ronald Ross, Sir William Lever, Sir Alfred Dale (Vice-Chancellor of the University), the Lord Mayor and Lady Mayoress, Mr. H. Wade Deacon (chairman of the hospital), Mr. F. C. Danson (chairman of the Tropical School), Mr. O. Harrison Williams, members of the committee and honorary and resident medical staffs of the Royal Infirmary, and many others. Mr. Danson, who presided, said that the ward represented an important development in the work of the school. It also involved some little change in their work. When the school first started 15 or 16 years ago it at once became apparent that they could not do really satisfactory work without giving the teachers and students an opportunity of studying the tropical diseases at the bedside. That difficulty was overcome by the generous and spontaneous assistance of their good friends at the Royal Southern Hospital, who placed a ward aside for the treatment of tropical diseases. He acknowledged the indebtedness of the school to the Southern Hospital for the assistance they had rendered. The Tropical School, however, grew out of the accommodation possible for the Southern Hospital to give them. It was perfectly obvious that the Royal Infirmary was the proper site for the ward of the school, owing to its proximity to the University. Hence they negotiated with the Royal Infirmary, and that ward was the result. He trusted that the new ward would thoroughly fulfil all the objects they had in view. As a teaching institution it would be of the utmost value, and he trusted it might also prove a source of relief to the suffering ones who might come there as patients. The Countess of Derby said she had great pleasure in declaring the ward open, and wished it every success as an adjunct to the Royal Infirmary. Mr. Danson then formally asked the chairman (Mr. Wade Deacon) to accept on behalf of the infirmary the new ward from the school committee.

A Luncheon to Sir Thomas Barlow.

Subsequently Sir Thomas Barlow was the chief guest at a luncheon given in the Adelphi Hotel by Mr. Danson in his capacity as chairman of the Tropical School. Following the loyal toast, the company, in silence, drank "The memory of our Founder, Sir Alfred Jones." Mr. Danson, in offering

the toast of "Sir Thomas Barlow," said their guest was a member of the Advisory Committee on Tropical Diseases, and was more or less directly interested in the work the Liverpool School was doing. He trusted that what Sir Thomas Barlow had seen and heard that day of the work for the development of the study of tropical diseases had favourably impressed him, and that he would be able to report to his committee in such a manner as would meet with their approval and result in the Liverpool School getting an increased grant in the near future. Sir Thomas Barlow, in responding, paid a warm tribute to the personal character and life work of Sir Alfred Jones. The Liverpool School of Tropical Medicine, he said, had long since passed through the experimental stage. Its numerous expeditions, carried to the very homes of death and disease, had afforded records full of real actual romance. Those expeditions, followed up by protracted researches in the school, had not only elicited valuable additions to the natural history of the diseases investigated, but had been justified up to the hilt by the actual improvement in the health conditions of the districts concerned from carrying out the lessons enforced by research. The school and its workers had lived through the half-hearted Laodicean criticisms of people who ought to have known better, and who had not the courage of their convictions, and now it had received recognition for its work. The workers of the school had given the greatest of all proofs of devotion by being ready to sacrifice their lives in the cause of science and humanity. The second great achievement of the school had been its instruction given in tropical medicine and hygiene to post-graduates, especially those who had already had some tropical experience and who had desired to increase their knowledge as to the accurate recognition of tropical disease and to get some acquaintance with the methods of dealing with it. "When one reads the accounts of the faulty hygienic conditions in many of our tropical colonies, especially in the native compounds," said Sir Thomas Barlow, "one is tempted to say, 'Who is responsible for these things.' The scientific study of tropical diseases shows conclusively where and how the doctor should begin and which particular measures would rapidly repay efforts and expenditure." At Liverpool they now had the first stage of research, which happily went on; the second stage of post-graduate teaching which would still continue; and they were about to take on a third function, that of bringing the study of tropical diseases within the curriculum of the medical undergraduate that was within the school itself. The association of the study of tropical diseases with that of general medicine could not be too close and intimate. The teacher, as well as the advanced student, could not be too solicitous to maintain a wide and comprehensive outlook, and to keep all his methods of examination up to the highest pitch of accuracy, while the real justification of this third step was the bringing of the laboratories and the sick man close together so that there might be the readiest possible facilities for identifying the real cause of the disease. He thought that the arrangement which would now exist was almost ideally complete. They had a constant succession of men of high scientific attainment bringing forth treasures new and old from their investigations far afield and from their laboratory researches. The new departure represented by that ward had a beneficial bearing upon the citizens of Liverpool. Everything that widened and strengthened the culture of their young doctors was a matter of profound importance to them. In their generous efforts on behalf of that school the citizens had had in their minds the health and vigour of their own countrymen in the great dependencies of the empire.

University of Liverpool: Medical Faculty.

Sir Victor Horsley, F.R.S., will deliver an address at the commencement of the winter term on Oct. 9th.

Heswall Sanatorium Enlargement.

At the last meeting of the West Derby guardians the union clerk (Mr. Harris P. Cleaver) submitted a letter which it was proposed to send to the other unions in Liverpool inviting them to share in a scheme for the enlargement of the sanatorium at Heswall so as to increase its accommodation from 50 to 106 beds. The scheme includes provision for the enlargement of the staff quarters. The undertaking is to cost £7000, and, on the basis of a 20-years' loan, the charge to West Derby would be £196 per annum, to Liverpool parish £196, and to Toxteth Park £98. Of the beds, West Derby and Liverpool parish would have 22 each and Toxteth 12. The letter stated further that the joint hospital committee in considering the matter had regard to the fact that a considerable number of children whose parents are in receipt of outdoor relief are in serious need of sanatorium treatment, and the committee trusted that the guardians would give due consideration to this important matter in considering the proposals submitted. Dr. Grimes, in proposing the adoption of the report, said they had at Heswall one of the finest sanatoriums in the country so far as its extent would allow, though it was too small. They had no hesitation in strongly recommending the guardians to agree to the expenditure of the moderate sum proposed in order to more than double the accommodation. The proposition was carried unanimously.

July 28th.

SCOTLAND.

Public Health Congress in Edinburgh: Child-Welfare Exhibition.

IN connexion with the Section on Child-Welfare an exhibition was held dealing with this subject, and was open for three days. As stated in the programme, it was "intended to be a means of helping mothers to understand better how to keep their children in good health, and a guide to health visitors in carrying out their difficult work." As such it can only be described as a complete success. In addition to providing interesting exhibits and many excellent practical demonstrations by nurses, medical men, and social workers, it drew to itself a large number of health visitors, district nurses, and poor mothers, thus reaching the classes for which it was intended. No price was charged for admission.

Proposed Chair of Tuberculosis for the University of Edinburgh.

The Edinburgh University Court at its meeting on July 20th received and approved a proposal from the honorary secretaries of the Royal Victoria Hospital for Consumption that a chair of Tuberculosis should be founded in connexion with the school.

The National Insurance Act.

The following letter has been issued by the Local

Government Board to secretaries and medical officers of poorhouses:—

It has been brought to the notice of the Board that in certain cases the medical officers of poorhouse hospitals have refused to grant medical certificates to insured persons who are inmates of the hospital, thereby depriving them, when they leave the institution, of their right to sickness benefit for the period of total incapacity during their stay in hospital. The Board are of opinion that it is the duty of the poorhouse medical officer to afford to insured persons who are inmates of the poorhouse full facilities for obtaining the benefits of the National Insurance Act, and they accordingly instruct that, in future, medical officers will, in cases of total incapacity, grant certificates showing the cause of the incapacity of the insured person, when required to do so, for the purposes of his Approved Society.

New Veterinary College for Edinburgh.

As indicating the progress of veterinary science in the city the laying of the foundation-stone of the new buildings of the Royal (Dick) Veterinary College, Edinburgh, is of interest. The ceremony was performed by the Marquis of Linlithgow in the presence of a large gathering. It is intended that the new building shall be a type of the model veterinary college of the present day. So much has the work expanded of recent years that the accommodation at the old college has long been overstepped.

July 28th.

PARIS.

The Menace of Dust and Flies.

M. Henri Schmidt and M. Justin Godart have carried the war against dust and flies into Parliament by the introduction of a Bill which forbids, under penalty of a 500 francs fine—with one to three days' imprisonment for a repetition of the offence—"the exposure or sale on the public way of foodstuffs intended to be eaten in the raw state, unless they are completely protected against flies and dust." A lay journal publishes the results of its interviews with representatives of both the shopkeepers and the street hawkers. The first contend that though the object of the Bill is praiseworthy the measure is impracticable, for the maximum of possible precautions are already taken; whenever possible the commodities are covered with fine gauze, waxed paper, or tinfoil. But it would be impossible to apply such measures, for instance, to a sausage or a pâté sold in cut slices, which must be exposed to the view of the customer, and the same, it is alleged, applies to fruits, salad, vegetables, and cheeses. Even if they were displayed under a glass case, it would have to be so continuously opened that it would be finally left open. Such a measure would necessitate the abolition of the display of such goods in front of shops, for which tradesmen pay large rents to the municipality. The hawkers also consider the measure impracticable, for their ordinary customers insist on handling the goods to satisfy themselves of their quality and to make their choice. All tradesfolk are united in the opinion that it would be entirely impossible to shelter their wares from flies, and insist that the only practicable measure is the energetic destruction of flies and the abolition of their breeding places, which are found especially in the public lavatories and the manure heaps and dairies and gardens.

Painless Childbirth.

Professor Ribemont-Dessaignes has communicated to the Académie de Médecine the discovery of a new remedy for totally suppressing the pains of childbirth. It is prepared by cultivating brewer's yeast in a solution of morphia hydrochloride, in which, as the result of oxidation processes, a new alkaloid is precipitated, which presents none of the characteristic chemical reactions of morphia, and especially is much less toxic. Its discoverers think that it has a special local action. In reality, it acts on the nervous centres and the great sympathetic. The uterine contractions become entirely free from pain, without any interference with their rhythm, as is shown by tracings with Fabre's apparatus. Labour is not retarded, but is even somewhat accelerated. The loss of blood after delivery is in no way affected. Perineal tears appear to be less frequent, for the perineum stretches with less resistance when sensation is abolished. An injection of 1, 2, or 3 c.c. of this substance is made under the skin of the abdomen when labour has begun and the os is dilated to the size of a shilling. Analgesia is complete in a quarter of an hour at most, without loss of consciousness and without the patient being prevented from conversing. Hardly any headache is experienced. Analgesia persists for seven hours. There does not appear to be any contra-indication, for neither albuminurics nor eclamptics have had their condition aggravated by its use. The child shows no signs of intoxication, unless it be occasionally some slight cyanosis and a little delay in the first drawing of breath; but these cases are very rare, and it has always sufficed to place the child head downwards and to make mouth-to-mouth insufflation to dispel this slight difficulty. Death has never resulted. Professor Pinard, who has made similar tests in his hospital, confirms the good results claimed by his colleague, and because he thinks that the new method will speedily become popular he insists on the necessity for warning the families not to be alarmed at these incidents of birth. M. Bazy has also employed the drug in his surgical service in operations on the prostate and urethra. He has shown that when it is used in combination with local anæsthesia by cocaine it considerably augments the effect of the latter, and when general anæsthesia has to be used a considerable economy of chloroform is effected by the use of this method. Among the Academicians present some took exception to the fact that the chemical nature of the product does not appear to have been given in sufficient detail. M. Bourquelot thinks it has to do with "oxydi-morphine," which is produced by the action of the most diverse oxidases upon morphia, and particularly by the effect of mushrooms; the product thus obtained is, however, insoluble.

The Esperanto Medical Congress.

The Tenth International Congress of Esperanto will be held in Paris from August 2nd to the 10th. The Universal Esperantist Medical Association (T.E.K.A.), which counts among its honorary members Professor Bouchard, Professor Richet, Professor Gariel, Professor Broca, and other eminent men, will bring to Paris numerous medical delegates from different nations, all enthusiasts in regard to the auxiliary language. Meetings will be organised in one of the amphitheatres of the Faculté de Médecine, at which various questions of technical and professional interest will be publicly discussed in Esperanto.

July 28th.

Correspondence.

"Audi alteram partem."

ISOLATION OF DIPHTHERIA CASES.

To the Editor of THE LANCET.

SIR,—In THE LANCET of July 18th Dr. Lovell Drage, for 27 years the medical officer of health of a rural district, has written regarding the "futility of hospital isolation," and quotes a couple of instances from his own district in support of his allegation of this futility. Inferences drawn from two cases only must be regarded with suspicion, since error may arise through paucity of data. I am sure that Dr. Drage will recognise this. He seems to think that his opinions on the futility of isolation hospitals have the support of Dr. E. H. Snell, who read a paper recently at Blackpool on the Utility of Hospital Isolation of Diphtheria, although in the opening lines of this paper Dr. Snell remarks, "I must disclaim any desire to pose as an opponent of the isolation of diphtheria."

Dr. Drage, stating the total number of cases of scarlet fever and diphtheria in 1913, as against the total numbers in 1912 and 1911, in support of his hypothesis of futility, forgets, not only that the population of England and Wales has increased during these years, but also that it is not statistically sufficient to take so short a period as three years in order to prove his case. He neglects also the fact, well known to epidemiologists, that in certain years or groups of years such diseases may be epidemic. It is, of course, a debatable point whether the incidence of diphtheria or scarlet fever is reduced by means of isolation hospitals, but the charge of futility can hardly be proved by such insufficient statistical facts as are provided for us by Dr. Drage.

In regard to diphtheria, the figures given by Dr. Snell are not above adverse criticism. He lumps together eight towns which are without isolation hospitals for diphtheria, and shows that the attack-rate of this disease per 1000 of population in these towns is less than in towns which are supplied with isolation hospitals. He infers from this that the presence of an isolation hospital favours the presence of diphtheria. It is equally evident that the absence of diphtheria obviates the need for an isolation hospital. Presumably, in these eight towns diphtheria has not been epidemic, and for that reason no hospital for the disease has been required. Dr. Drage has failed entirely to appreciate the benefit of isolation hospitals in the treatment and cure of disease, nor does he take notice of the inconveniences and financial loss which may fall upon the ratepayer who is forced to keep his infectious relative or servant at home. An isolation hospital is an excellent investment of the ratepayers' money as an insurance against such disabilities, and in that respect corresponds in *utility* to the other hospitals and cottage hospitals scattered throughout the country.

Again, both scarlet fever and diphtheria may be serious diseases. Why should not they, like other diseases, receive adequate institutional treatment? Dr. Drage will, I am sure, agree with me that cases, say, of acute rheumatism or of pneumonia are more likely to get well in hospital than if they are nursed amid squalid surroundings or in poverty-stricken homes. In my experience, diphtheria needs most careful nursing, and I know of no other illness (with the possible exception of enteric fever) where the life of a patient depends so entirely upon proper treatment and nursing.

That the case mortality or fatality is less in towns with isolation hospitals can be worked out from the figures quoted in the paper of Dr. Snell with regard to diphtheria. I am not able to give any comparable figures relating to scarlet fever. It is known, however, that scarlet fever is a much less severe disease to-day than formerly it was. There must be several factors in the diminution of its virulence, in the comparative absence of the severe and septic cases. And one of the reasons, as Dr. Drage will perhaps allow, may be that people who are ill with scarlet fever are removed from dirty homes to clean hospitals.

I am, Sir, yours faithfully,

A. T. NANKIVELL,
Medical Officer of Health of the Borough of Poole.

July 23rd, 1914.

ORAL SEPSIS AND THE EXTRACTION OF TEETH.

To the Editor of THE LANCET.

SIR,—It is good to find in your pages the considered opinion of Sir James Goodhart with regard to the wholesale extraction of teeth, now so common, and at a meeting of the Harveian Society not long ago one was glad to meet with similar protests. It is, of course, recognised that in many cases extraction of teeth is the treatment necessary, and I am on record in your columns to this effect (1906). Apart, however, from differences of opinion in the interpretation of radiograms as to actual conditions present and the treatment thereof, a great divergence seems to have arisen in connexion with "preventive treatment," and one line of argument seems to be as follows: Gingivitis is an early stage of pyorrhœa. If the patient has no pyorrhœa now so much the better, but he must take no risks and lose his teeth lest a worse thing come upon him. It is further urged that by removing the teeth whilst the alveolus is healthy, the latter will not be absorbed and will afford good support for artificial substitutes. But the "extractors" are not taking themselves alone along the easy way; unfortunately, impressionable students are being taught the steps. I have in mind a candidate for the L.D.S. diploma who, having examined a case of inferior protrusion in a young girl, was asked if he could suggest any treatment. He blithely replied that all the teeth should be removed. As soon as the examiner recovered he ventured to ask the reason for such a decision, and received the reply that a probe could be passed between the teeth and the gums. The word "millimetre" was used, perhaps to give the impression of scientific accuracy, but the candidate appeared to be honest in his belief. Sir James Goodhart says that "an exaggerated view is too frequently taken of trivial conditions of the buccal mucous membrane." May I quote in confirmation one of the most striking cases I have recently seen. A young medical man, having a history of some abdominal trouble, said that a provincial dentist had condemned him to lose all his teeth. The patient had allowed two to be extracted, and had been sent to town for a second opinion, taking with him the now fashionable sheaf of radiograms. These did not appear to throw much light (or shade) on the matter, but the verdict was confirmed. When

I saw him later there was no trace of pyorrhœa: there was no recession of gums; they were of a healthy pink colour with the exception of a very slight gingivitis localised to one lower incisor. There was no caries, the teeth were quite firm, and I hope that he has them still. Many will agree with Sir James Goodhart "that a harmful practice has come into vogue that needs to be held up," and will welcome his assistance.

I am, Sir, yours faithfully,

Portland-place, W., July 27th, 1914. SIDNEY SPOKES.

To the Editor of THE LANCET.

SIR,—Having read Sir James F. Goodhart's letter in THE LANCET of July 25th, I am writing to say that in relation to throat, nose, and ear surgery it is of the greatest importance to extract all carious teeth and treat pyorrhœa alveolaris; it is even well, too, to scale all teeth carrying tartar previous to all such operations. It is truly remarkable, but no less the case, to observe the coincidence of the septic mouth and nasal suppuration, sinus disease, and aural discharges, and to attempt to improve these without sweeping away all affected teeth is absolutely futile. An extended experience has also proved to me the close connexion between the septic mouth and septic tonsils, and the danger of enucleating such tonsils without having first made the mouth clean by extracting all bad teeth.

So far from there being too much dental interference in the way of extraction, in my opinion there has not been nearly enough, and if there has been any "remissness" it has been in leaving evident and aggravated septic conditions in the mouth to drift on indefinitely.

I am, Sir, yours faithfully,

WM. STUART-LOW, F.R.C.S. Eng.

Harley-street, W., July 27th, 1914.

To the Editor of THE LANCET.

SIR,—Sir James Goodhart's protest against the mental obsession of pyorrhœa that has taken hold of the medical, and especially the dental, profession is very timely, and coming from such an authority it is to be hoped it will receive the attention and consideration that it deserves.

When oral sepsis was first suggested years ago as a causal factor in many conditions of ill-health, one remembers with some gratification cases in which one was able by examination of the mouth and condemnation of the teeth "to put the finger on the spot" and clear up the trouble. But now the tables are turned and the patient comes with the diagnosis from the dentist: "The dentist says the cause of my anæmia (or whatever the ailment may be) is my teeth and they must all come out." And, as Sir James Goodhart points out, when one comes to examine the mouth one finds in many cases a trivial gingivitis, often quite localised, which readily yields to treatment.

These conditions have assumed such a magnitude of importance in the professional mind as causal factors of disease that their relative position as *results* of ill-health appear to be entirely overlooked. But actually the oral affection is the result of a depressed vitality from some other cause in many more cases than it is the primal cause of the disease. In such cases, leaving aside the brutal mutilation involved, extensive extraction of teeth often has a most disastrous effect upon the already depressed vitality of the patient.

It is incumbent upon the leaders of the profession, and especially of the dental profession, to take steps to bring about a more steady mental balance on this question, for, as Sir James Goodhart says, a good many of us have lost our heads, and unfortunately when we lose our heads it is the innocent, ignorant, trustful public who suffer. When it is only a question of drinking a few gallons of sour milk or paraffin the issue is not vital, but when it involves extensive mutilation of the body it is incumbent upon the more level-headed among us to protest with all the power at our command.—I am, Sir, yours faithfully,

Streatham, July 25th, 1914. LOUIS STAMM.

To the Editor of THE LANCET.

SIR,—Many dental surgeons will thank Sir James Goodhart for uttering a protest against the wholesale extraction of teeth now so prevalent. It is perfectly true that, as he says, teeth are "pounced upon" as the cause of many disorders, including cancer, and it is a matter of great difficulty to persuade patients that they have not got pyorrhœa when their medical attendant assures them that they have. When we hear of aged persons going through the severe operation of multiple extractions from which they do not always recover, and of others who have bartered their powers of mastication and speech and altered their features for a problematical benefit, it is time somebody spoke out. At the same time the other extreme must be guarded against—that of preserving and scaffolding up loose and septic teeth.

I think Sir James Goodhart is in error when he describes pyorrhœa as always a painful disease. It is so in the acute form, but as a rule it is insidiously painless.

I am, Sir, yours faithfully,

Harley-street, W., July 27th, 1914. WM. RUSHTON.

PS.—Your annotation on the subject some months ago summed up the matter in a most judicial spirit.—W. R.

To the Editor of THE LANCET.

SIR,—Sir James F. Goodhart's protest in your issue of July 25th against the extraction of teeth for so-called pyorrhœa alveolaris and his criticism of the routine practice by vaccine treatment are the expression of the thoughts of many members of the medical profession. Recently a patient of mine had most (why not all?) of his teeth removed because he was said to be suffering with "aortic arteritis," as a matter of fact, from simple dyspepsia, the result of over-eating and insufficiency of exercise. Without his teeth he could only eat small quantities of soft food, and within a fortnight the aortic arteritis had ceased to be in existence. I also cured a case of so-called pyorrhœa by the use of euthymol tooth cream and the suggestion that it would be wiser to sacrifice the appendix than lose the teeth.

Seriously, this craze of fashion in diagnosis is detrimental to the prestige of the medical profession. It cannot be to our advantage that the diagnosis made by one man should be condemned as absolutely wrong by another member of the same profession, and yet it is almost impossible to avoid doing so, and tell the truth. This last week, when I was endeavouring to minimise my difference of opinion, the patient said to me, "Please give a name to my disease," and what could one do under the circumstances? It used to be said that medicine was a noble profession but a bad business, but now it seems to me that business is the first

consideration and that exaggeration of diagnosis is becoming the fashion.

I am, Sir, yours faithfully,

July 26th, 1914. G. SHERMAN BIGG.

To the Editor of THE LANCET.

SIR,—The letter you publish in THE LANCET of July 25th from Sir James F. Goodhart is so entirely true that it will be endorsed by many who practise dental surgery. We who spend the best part of our professional hours in trying to save teeth are often in the anomalous position of conflict with both physicians and surgeons. This is due to the fact that we are daily requested to sacrifice sound teeth because of some slight marginal inflammation or retrocession of the gums, misnamed pyorrhœa alveolaris. We are well aware that time will correct this mistaken zeal, for there is an innate desire to keep what nature has supplied, and "the fashion of this world passeth away." Meanwhile, it needs the words of a wise physician to call a halt, for this needless sacrifice is spreading far and wide, even to the children.

I am, Sir, yours faithfully,

R. DENISON PEDLEY.

London Bridge, S.E., July 25th, 1914.

To the Editor of THE LANCET.

SIR,—Sir James F. Goodhart, in your issue of July 25th, has opened up a most important clinical observation. Those who possess practical acquaintance with dentistry will agree with his statement, "but dirty mouths are not pyorrhœa." Yet dirty mouths may lead to pyorrhœa, as dirty intestines may lead to appendicitis.

Three years ago I pointed out to the profession, through the medium of the Psychological Association, that appendicitis was quite rare in all the private and public asylums of the British Isles. And believing that the soundest practice of medicine is prevention, can we not apply equally similar rules of dietetics and suitable cleansing of the bowels, such as prevent appendicitis in asylums, to pyorrhœa alveolaris?

I am, Sir, yours faithfully,

Alton, Hants, July 25th, 1914. JOHN FREDK. BRISCOE.

NURSES' REGISTRATION.

To the Editor of THE LANCET.

SIR,—By a mistake I wrote last week that 500 matrons of hospitals had signed the protest against the State Registration of Nurses. This is not quite accurate. The 500 include matrons of Poor-law infirmaries, institutions, and nursing homes, just as the 500 who signed in favour of the Bill, whose names I have seen, also include these. It also includes late matrons, but not quite so late as one of the signatories of the petition in favour of the Bill, who signs as "Late Matron" and left her post 21 years ago.

The number of matrons of hospitals who have signed against the Bill is 335, of matrons of infirmaries 15, of former matrons 20, of matrons of nursing homes and institutions 101, and a further number of signatures has been received since this list was drawn up.—I am, Sir, yours faithfully,

KNUTSFORD.

Knebworth Hall, Royston, Herts, July 29th, 1914.

THE TECHNIQUE OF ARTIFICIAL PNEUMOTHORAX.

To the Editor of THE LANCET.

SIR,—The letter of Dr. Clive Riviere in your issue of July 18th, whilst refuting some of the objections raised to the accepted (Saugmann) technique of artificial pneumothorax, suggests a modification of this technique which is itself not free from objection. Dr. Riviere holds that a pointed needle should not be used at all at a first operation, as with it a wound of the lung is unavoidable. This is not the experience of those who have used the pointed needle most, and Saugman, who has just described his technique at length,[1] writes:—

> Among the objections which Brauer raises to the puncture method is this—that the sharp needle, even when the pleural space is free, must of necessity injure the surface of the lung. This, however, may be avoided by placing the patient in correct position—i.e., so that the puncture is made at the spot in the thoracic wall which lies uppermost. In this way assurance is obtained that the aspirated air at once collects around the needle-point, and the layers of the pleura become separated from one another. If the needle is inserted slowly this separation must occur, in view of the mechanism of coherence of the layers, at the moment the needle-point reaches the parietal pleura and therewith neutralises the adhesive force at the particular point of the pleura.

In the same paper Saugman discusses the employment of a blunt instrument such as Dr. Riviere uses to perforate the parietal pleura. He points out the greater probability of pleural shock, and since a certain force must be used the needle can easily be driven into adherent lung tissue and lacerate it in a way that the sharper needle would not do. It should, moreover, be noted that Saugman's only two fatal cases were due probably to aspiration of gas from the air in the bronchi or pleura through such a laceration, and not from the apparatus itself. These two cases and one recorded by Zink from the Basler Heilstätte in Davos[2] are therefore to be added to the case cited by Dr. Claude Lillingston in THE LANCET of Sept. 13th, 1913, and must lead to an admission of the possibility of this accident. Saugman also warns with justice against forced inspirations which must favour aspiration into a lacerated vein, and advises tongue traction rather than artificial respiration if the breathing should cease. His experience, as well as that of many others, speaks for the employment of a sharp needle of small bore if complications are to be avoided.

I am, Sir, yours faithfully,

Arosa, Switzerland, July 21st, 1914. EGBERT MORLAND.

To the Editor of THE LANCET.

SIR,—There are one or two points in Dr. W. Parry Morgan's letter in your issue of July 25th on which comment might be made. He states that manometric oscillations are ample proof that the lung has been punctured. He apparently overlooks the fact that the needle is, *viâ* the manometer, in communication with the external air and consequently its entry of the pleural cavity is indicated by the negative oscillations. The so-called elasticity of the lung is the cause of the negative pressure, and this has been found in the cadaver to be equal to 8 cm. of water.

[1] Brauer's Beiträge zur Klinik der Tuberkulose, vol. xxxi., p. 571.
[2] Ibid., vol. xxv., p. 421.

As the forces of respiration act in all directions there are in the manometer corresponding oscillations of a few centimetres on either side of − 8. Their range depends on the depth of respiration and the presence of adhesions in the neighbourhood of the puncture. In his remarks on the positive pressure oscillation when the patient coughs he does not take into consideration the inertia of the column of water. It seems fairly obvious that the sudden application of a considerable though momentary force causes a violent oscillation which continues beyond the point at which the force ceases to act, and thus gives the transitory positive reading. This, if it does more than confirm that the pleural cavity is entered, tends to show that the lung is not punctured. Valve action of the lung is, of course, an incident in aspirating effusions, but the high negative pressure employed makes the conditions totally different.

The danger of wounding the lung, provided the pleura is not adherent, would seem to be avoided by using a blunt cannula. The advantage of a sharp needle, even with a flow of gas, is not obvious, and if the pleura is adherent surely the blunt instrument will do less damage.

I am, Sir, yours faithfully,

Rayleigh, July 25th, 1914. W. MILLER.

To the Editor of THE LANCET.

SIR,—Is it bradypepsia of novelty to say that the chances are against Dr. W. Parry Morgan's new apparatus being a useful contrivance? What I look at is this. From 1911 to the present date a great number of artificial pneumothorax cases by the puncture method have been done on the continent. In England, if we except Dr. Lillingston, comparatively very few. Yet on page 589 of the tenth part of *Therapeutische Monatshefte* for 1911 there is figured an apparatus which is the same to a T-piece as that now in use, with the one exception of the small manometer-throttle devised by Petersen, of Copenhagen, for the purpose, according to Saugman, of estimating mean intrapleural pressure with full regard to the physiological fact that inspiration lasts nearly twice as long as expiration. Continental workers, as might have been expected, have had ideas during this time, but they do not seem to have made good with them; and it is therefore unlikely, until insular experience is a good deal greater, that British workers will succeed in wiping their eye. However, I shall certainly try Dr. Morgan's new needle before long.

I am, Sir, yours faithfully,

Barnsley, July 27th, 1914. W. C. RIVERS.

TUBERCULIN "ENTHUSIASTS."

To the Editor of THE LANCET.

SIR,—I hope that Dr. Charles Miller's letter in your issue of July 25th will be noted by the tuberculin "enthusiasts." Several similar cases have come under my notice, and I am afraid they may be more common than is generally realised.

Dr. Miller appears to think the Insurance Committee is to blame in the case he describes; on what grounds is not evident. The committee may recommend a patient to attend some institution approved by the Local Government Board and may pay the fees, but it is surely not therefore to be held responsible for the treatment recommended by the medical officers of the institution.

If the Insurance Committee recommends an insured person to attend the Brompton Hospital, for example, it would not be justified in dictating to the physician what treatment he might or might not employ. Neither can the committee dictate to the medical officer of a dispensary.

I am, Sir, yours faithfully,

1 Harley-street, W., July 25th, 1914. J. EDWARD SQUIRE.

THE WORKING OF THE NATIONAL INSURANCE ACT IN GREAT YARMOUTH.

To the Editor of THE LANCET.

SIR,—I am able to confirm from my own knowledge both the accuracy and the moderation of your Commissioner's report on the above subject. With regard to "contracting out" I was present within a week or two of the panel being formed, at a meeting of the so-called local medical committee (before it was legally elected and formed), and the minutes of the previous meeting recorded that it had been proposed and carried that allocation of patients who had not chosen their doctors should be immediately proceeded with. Two or three of my non-panel brethren were also present and can confirm my statement, so it was not a case of "months," but immediately on the formation of the panel. Dr. Henry Blake, too, at one of these early meetings proposed that a floor of the hospital should be reserved for panel patients and panel doctors, and if the hospital committee did not agree that pressure should be put on it by inducing the Friendly Societies not to continue their subscriptions. Dr. J. I. Sankey, one of the three who signed the letter in your issue of July 18th, was the proposer at the final meeting in December that we should continue to resist the Act, and made no mention then of change of attitude on the part of the British Medical Association. However, it will neither interest your readers nor do any good by going further into the inaccuracies of the letter; but I think I have shown how the Act and the conduct of the panel men to their non-panel brethren since its adoption have shattered the medical union and professional good-fellowship of this town.—I am, Sir, yours faithfully,

RAYMOND HENRY SHAW.

Great Yarmouth, July 27th, 1914.

THE GEOGRAPHICAL DISTRIBUTION OF APPENDICITIS.

To the Editor of THE LANCET.

SIR,—Mr. R. W. Murray's paper in your issue of July 25th is of great interest to me. For the last six years I have been in medical charge of the hospital for natives at Luxor, Upper Egypt. During this time I have only seen two probable cases of appendicitis, both being inhabitants of the town itself. The poor eat Nile fish, but are chiefly vegetarians of necessity. The better class native eats meat, fowl, eggs, and fish, but always fresh; there is no such thing as cold storage.

Two other points have struck me: 1. The relative infrequency of malignant disease. For instance, I have only seen one case of cancer of the breast, and that woman came from a place over 100 miles away from Luxor. 2. Though the population is

riddled with untreated or partially treated syphilis I have never seen a case of aneurysm.

I am, Sir, yours faithfully,

W. E. NICKOLLS DUNN, M.B. Lond.

The Junior Athenæum Club, Piccadilly, July 25th, 1914.

THE MEDICAL LOG OF THE "LORD STANLEY."

To the Editor of THE LANCET.

SIR,—I wish to make a few remarks upon the annotation entitled "Diseases Aboard Ship in the Past," in your issue of July 18th, p. 173.

First, the complaint only attacked 30 out of 480 slaves, of whom 13 died. Secondly, the log ended suddenly because of arrival at Grenada and landing of the slaves. Thirdly, I do not think the suggestion that the slaves took poison is a feasible explanation, for many of them had been on board several weeks, after an indefinite time in barracoons on shore, before the complaint developed, and in neither place would there be any opportunity for concealing poison. Ptomaine poisoning might be a more probable occurrence, but only one patient at a time was attacked.

I am, Sir, yours faithfully,

A. BOWES ELLIOTT, F.R.C.S. Eng.

Abergele, July 28th, 1914.

THE MEDICAL DIRECTORY.

To the Editor of THE LANCET.

SIR,—The annual circular of the Medical Directory has been posted to every member of the medical profession. Another copy will be forwarded on request should the first notice have inadvertently gone astray. We should be glad if practitioners will kindly coöperate in returning the forms to us promptly, so that the entries may be as accurate as possible.

To meet the convenience of purchasers, the Directory will be on sale this year early in the month of December.

We are, Sir, yours faithfully,

J. AND A. CHURCHILL.

7, Great Marlborough-street, W., July 25th, 1914.

THE TECHNIQUE OF ABDERHALDEN'S SERUM REACTION.

To the Editor of THE LANCET.

SIR,—I regret that I allowed an error to creep into my paper on Abderhalden's serum reaction which appeared in THE LANCET of July 25th. In the last line of the second column on p. 226 the figures 0·2 and 0·24 should read 0·02 and 0·024.

I am, Sir, yours faithfully,

July 27th, 1914. W. E. BULLOCK.

Dr. W. A. Brend has been appointed a medical referee under the Workmen's Compensation Act for county court circuits Nos. 42 and 44.

BRUSSELS MEDICAL GRADUATES' ASSOCIATION.—The annual meeting of this association will be held at the Earl's Court Hotel, Tunbridge Wells, under the chairmanship of Dr. Fielden Briggs on Saturday, August 8th, at 1.30 Members are invited to bring ladies for the motor tour and luncheon. Tickets, price 5*s.* (not including wine), may be obtained from the honorary secretary, Dr. Arthur Haydon, 29, Broadhurst-gardens, Hampstead, N.W.

THE

BRITISH MEDICAL ASSOCIATION.

EIGHTY-SECOND ANNUAL MEETING AT ABERDEEN.

THE eighty-second annual meeting of the British Medical Association has been held this week in the ancient and picturesque university city of Aberdeen. The medico-political proceedings of the Representative Body began on Friday, July 24th, while the congress was formally opened on Tuesday afternoon, July 28th, when the annual general meeting of members was held in the Mitchell Hall of Marischal College. The retiring President, Dr. W. Ainslie Hollis, being absent from illness, his successor, Sir Alexander Ogston, K.C.V.O., M.D., emeritus professor of surgery in the University of Aberdeen, was inducted by Dr. J. A. Macdonald. After a vote of thanks to the retiring President had been carried with acclamation, Sir T. Clifford Allbutt was formally introduced as President-Elect for the annual meeting at Cambridge next year.

The presidential address, to which reference is made elsewhere in our columns this week, was delivered by Sir Alexander Ogston in the music hall on Tuesday evening before an appreciative audience. The President was supported on this occasion by the Lord Provost of Aberdeen, who offered a welcome to the British Medical Association on behalf of the city. After the ceremonial introduction to the President of distinguished foreign guests and delegates from oversea dominions, the Association's gold medals of merit were presented to Mr. T. Jenner Verrall, the popular chairman of representative meetings, and Dr. Edwin Rayner, who has for many years served as honorary treasurer of the Association.

The addresses in Medicine and in Surgery, by Dr. Archibald E. Garrod and Sir John Bland-Sutton, were of more than usual interest this year. They were delivered in the Mitchell Hall of the magnificent new buildings of Marischal College on Wednesday and Thursday afternoon respectively, and they are printed in full in our columns this week by the courtesy of the editor of the *British Medical Journal*. Marischal College, it will be remembered, is one of the two distinct foundations which, after centuries of more or less complete independence, were united 54 years ago to form the modern University of Aberdeen. As Dr. J. Scott Riddell points out in the very interesting and instructive handbook and guide which he has compiled for the benefit of this gathering, medicine was then for the first time placed on a satisfactory footing among the University faculties of Aberdeen, and since that time its development has gone on steadily.

Aberdeen offers many attractions to visitors. The grey buildings, the charming way in which they are grouped as seen from the approaches to the city, and the brightness and activity of the principal streets are quickly appreciated. Aberdeen has a beauty and an aspect peculiarly its own. There are few large cities which can boast a position which brings them at the same time into the category of great industrial centres and seaside health resorts. Within a few minutes' tram ride of the busiest parts of the city a broad expanse of sea

is reached, where crowds enjoy sea bathing or a walk along a fine parade.

The port, harbour, and docks present a very animated scene. There appears always to be something going on. Trawlers are constantly discharging enormous catches of fish, and Aberdeen takes a very large share in keeping the Scotch and English markets supplied with haddocks and herring, which form a very valuable addition to the country's food-supply. The value of white fish alone landed in a year is over a million sterling, and the trawling fleet includes 250 boats and 70 steam liners and drifters, which represent an enormous capital invested in this important industry.

The beauties of the country around are well known, especially the views along the valley of the Dee, to Banchory, Braemar, and Ballater, and special facilities were given to the visitors to make excursions to these places. Aberdeen also provides palatial accommodation for the serious side of the meeting, the noble municipal buildings and the stately Marischal College giving an ample and comfortable arena for the various sectional and business gatherings. The population of this great and busy city steadily grows and the health needs of its populace are carefully watched. Already the authorities find that in the matter of water-supply further provision must be made to keep that supply adequate. A new scheme involves drawing upon the waters of the Dee for the purpose, and the water is to be softened by the well-known lime process.

Apart from its many medical interests, both historical and practical, Aberdeen offers a variety of attractions to the visitor. This was taken advantage of by energetic local committees and the givers of private hospitality, who between them provided a full programme of entertainments, including receptions, concerts, garden parties, and excursions of all kinds, as well as formal visits to a number of institutions and local industries. The Aberdeen Royal Infirmary was on view to medical visitors on Thursday afternoon, when the directors and honorary staff were "at home," and other kindred charities also extended invitations to members of the Congress.

The annual exhibition was held partly in the general laboratory and partly in the dissecting-rooms at the Marischal College. Although the number of exhibitors was smaller than usual the result was full of interest, and there has been a good attendance of visitors throughout the meeting. The exhibits, as usual, comprised surgical instruments, antiseptic dressings and appliances, electrical and high frequency apparatus, chemical and pharmaceutical preparations, special foods, and the many productions and manufactured goods which fall within such a category. On Wednesday the exhibition was kept open until 10 P.M. on the occasion of the reception by the University.

A feature of the social programme this year was a series of excursions arranged for those interested in archæology or in the evidences of early history in the environment of Aberdeen. Stone circles giving interesting confirmation of the earliest principles of orientation, interesting geological formations in the district, and a group of historic castles have all been studied closely by members of the Association with tastes in the indicated directions.

The mornings of Wednesday, Thursday, and Friday were allotted to the work of the scientific sections, which are holding their meetings, as we go to press, in the class-rooms of Marischal College. The sections this year number 15, and reports of the various papers and discussions will appear in our next issue. In the Section of Medical Sociology, whose proceedings are usually of general interest with a distinctly topical flavour, a discussion on the Responsibility of the State as Regards Venereal Disease was held on Wednesday, while Thursday was set apart for discussion on a State Medical Service *versus* a Panel System, and on Medical Certification other than that of Insanity. In the Section of State Medicine and Medical Jurisprudence discussions were arranged on Death Certification, on Malingering, on the Period and Duration of Infectious Disease, and on the Administrative Treatment of Tuberculosis; while in the Section of Tropical Medicine another discussion of wide general interest was opened by Colonel W. G. King, I.M.S., on the Education and Position of the Sanitarian in the Tropics. Both in the Section of Dermatology and Syphilology and in that of Naval and Military Medicine there have been profitable discussions on the Treatment of Syphilis.

Obituary.

GERALD ALLPRESS SIMMONS, M.D., B.S. LOND., M.R.C.S. ENG., L.R.C.P. LOND.,

SENIOR RADIOGRAPHER TO ST. GEORGE'S HOSPITAL AND TO THE ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.

Dr. Simmons died on July 26th, in his fiftieth year, after a long illness. A Devon man by birth, he was educated at St. Mary's Hospital, where he won an entrance scholarship. After the usual medical course he qualified as M.R.C.S. Eng. and L.R.C.P. Lond. in 1890. In the following year he took the M.B., B.S. degrees at the University of London, with honours in medicine, midwifery, and forensic medicine; and in 1892 he proceeded to the full doctorate. After filling the posts of house physician and assistant anæsthetist at St. Mary's Hospital, Dr. Simmons spent two or three years as ship's surgeon and on the West Australian goldfields. Returning to London, he started practice in Ashley-gardens, Westminster; but he was soon attracted to the therapeutic possibilities of X rays, then newly discovered, and as time went on he devoted more and more attention to this branch of medicine, until he finally became a specialist in radiology and electrotherapeutics. He was appointed medical officer in charge of the X ray department at St. Mary's Hospital, a position which he exchanged about eight years ago for that of senior radiographer at St. George's Hospital. Here he found a department which had been for some years unsatisfactorily managed, and he speedily reorganised it from top to bottom, increasing both his own reputation and that of the hospital at the same time. He also joined the staff of the Royal Westminster Ophthalmic Hospital in a similar capacity.

Dr. Simmons contributed scantily to the literature of his specialty. His article on X rays in "Pye's Surgical Handicraft" was perhaps the most important of his published writings. For many years he was one of the most loyal members of the

Chelsea Clinical Society, of which he had been honorary treasurer for some years. His colleagues on the council of that society, as well as those on the staffs of the hospitals with which he was connected, and indeed all who had personal or professional relations with him, will greatly miss one whose frank, honest, and manly nature was as easily recognisable as were his professional ability and his breadth of intellect. To his widow the sympathy of Dr. Simmons's many friends will be freely extended.

THE CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA.

FIFTH ANNUAL SESSION HELD IN LONDON DURING THE WEEK OF JULY 27TH.

THE Clinical Congress of Surgeons of North America, an organisation whose admirable aims we recently described in these columns, held its Fifth Annual Session in London during this week. This Congress differs from other medical congresses in this, that its main purpose is not the discussion of theory and practice, the recording of results, or the introduction of new ideas, but the practical demonstration by well-known surgeons in the hospitals to which they are attached of their technique and methods of work. It was a happy idea that having observed the methods practised in various surgical centres in America the American surgeons, and surgeons of other nationalities affiliated to the Congress, should have come here to study the methods of their British confrères on their own ground. Alas! the political condition in Europe compelled the hasty return to the continent of some of our distinguished confrères.

The headquarters of the Congress were at the Hotel Cecil and the Hotel Savoy, the Presidential meeting on Monday being held in the Hotel Cecil. The Grand Hall was thronged, and a considerable number of lady doctors were among those present, as well as several continental surgeons. In the adjacent rooms were held exhibitions of surgical instruments and apparatus and of medical literature. The evening sessions of the remaining days were held simultaneously in the Grand Hall of the Hotel Cecil and the ballroom of the Hotel Savoy, the former being devoted to papers and discussions on general surgery, the latter to the various surgical specialities.

The meetings throughout have been attended with great success—a success measured by enthusiasm and by overflowing audiences, and arrived at by good organisation. Every seat on the floor of the Grand Hall was occupied at the opening meeting, hundreds were standing round the sides of the hall, and the gallery high up reserved for ladies was equally full, and formed a picturesque background to the view from the platform.

With characteristic directness the Congress plunged *in medias res* by attending specially arranged surgical clinics at the various London hospitals throughout Monday without waiting for the opening meeting. After a presidential dinner at the Hotel Cecil on Monday evening, which was attended by the American Ambassador, the Hon. W. Hines Page; Sir Rickman Godlee, retiring President, and Sir W. Watson Cheyne, President-elect, of the Royal College of Surgeons of England; Sir Thomas Barlow, President of the Royal College of Physicians of London; Sir Francis Champneys, President of the Royal Society of Medicine; Mr. F. C. Dwyer, President of the Royal College of Surgeons of Ireland; Dr. John B. Murphy, President of the Congress; Dr. W. L. Rodman, President of the American Medical Association; Dr. T. D. Watkins, President of the American Gynæcological Society; Dr. Charles H. Mayo, Dr. A. B. Kanavel, Sir Arbuthnot Lane, Sir StClair Thomson, and many other surgeons of mark too numerous to mention. The opening meeting of the Congress took place in the Grand Hall of the Hotel Cecil. The meeting took place promptly, at the advertised time of 8.30 P.M., the main doors being closed to avoid interruption.

An address of welcome was delivered by Sir Rickman Godlee, honorary chairman of the London committee, who expressed the regret of all that the Congress should have clashed with the annual meeting of the British Medical Association at Aberdeen, with the unfortunate result that many well-known representatives of British surgery were unable to be present and join in welcoming their American brethren. He extended to the visitors an invitation for Wednesday to the Royal College of Surgeons, which was the possessor of the most important surgical museum in the world.

Dr. Murphy, on his inauguration as President of the Congress, commented on its peculiar character and the magnitude of the unprecedented task it had undertaken in organising such a meeting so far away from home. He spoke most highly of the impressions already gained of British surgeons and surgery, and expressed the conviction that the result of the Congress would be to extend the admiration and affection of American surgeons for the profession and the people of this country, and to increase their realisation of the fact that science was a brotherhood that embraced the entire world.

The American Ambassador, the Hon. Walter Hines Page, in extending a warm greeting to the visitors from the United States, said that they must already have learnt from their English friends how heartily they were welcomed in London. He referred to what a distinguished English surgeon had once said to him, that he was accustomed to tell his students that their surgical education was hardly complete until they had visited America and observed the skill of the American surgeons. Now that so large a body of American surgeons had come to England to pursue a corresponding course in this country he could only say that "honours were easy." He spoke eulogistically of the great cordiality existing between the two nations, and expressed the conviction that as Americans and Englishmen were "anatomically alike," they would in course of time become more politically akin.

Owing to the unavoidable absence of Dr. George Emerson Brewer, the retiring President of the American Medical Association, it fell to the lot of Dr. W. L. Rodman, of Philadelphia, the incoming President, to convey the cordial greetings of the Association to the medical profession of Great Britain. These introductory ceremonies occupied

nearly an hour, so that it was nearly half-past nine when the scientific addresses began.

The first was that of Professor A. von Eiselsberg, of Vienna, who read a paper on the Choice of the Operative Method for Ulcer of the Stomach. This paper, which will be found on p. 296 of this issue of THE LANCET, was discussed by Sir Watson Cheyne and Mr. James Sherren. Dr. Murphy then delivered an address on Arthrodesis and Bone Transplantation, its Limitations and Technique.

An excellent feature of the organisation was formed by the large bulletin boards displayed in the registration room, whereon were posted the various items of the day's programme, so that an inspection thereof gave a comparative view of the arrangements at a glance. From these boards it was a much easier process to construct a plan of action than from the printed programme, though that, too, was a carefully thought-out document.

Through the courtesy of Dr. Franklin Martin, the General Secretary of the Congress, and Mr. A. D. Ballou, the manager, we are able to publish at full length many of the addresses delivered and papers read. Brief notes on some of the discussions which ensued both in the General Surgical Division and the Special Surgical Division are appended, but no attempt has been made to describe the numerous clinical exhibitions provided by the London surgeons at the chief metropolitan hospitals. The essential feature of these demonstrations was that they should be seen to be appreciated, and we are happy to know that what the members of the Congress have seen they have cordially approved of.

The following papers read at the Congress will be found at the pages indicated:—

On Gastric Ulcer, with Special Reference to its Treatment by Gastrostomy (Sir Watson Cheyne), p 294.

The Selection of the Method of Operation in the Treatment of Gastric and Duodenal Ulcers (Professor von Eiselsberg), p. 296.

Internal Derangements of the Knee (Mr. Robert Jones), p. 297.

The Results of Operation (Laryngo-Fissure) for Intrinsic Cancer of the Larynx (Professor E. Schmiegelow), p. 300.

Hyperthyroidism: Primary and Late Results of Operation (Dr. C. H. Mayo), p. 301.

Typhoid Perforation (Dr. G. E. Armstrong), p. 307.

The Treatment of Inoperable Carcinoma of the Uterus by Application of Heat (Dr. J. F. Percy), p. 309.

Factors of Safety in Cleft Palate Surgery (Dr. J. R. Eastman), p. 312.

Suture of the Levator Ani Muscle in Perineorrhaphy Operations (Dr. Henry Jellett), p. 315.

The Results of Radical Operative Treatment of Cancer of the Uterus (Dr. T. Wilson), p. 318.

EVENING SESSION.

A.—GENERAL SURGICAL DIVISION.

TUESDAY, JULY 28TH.

The Use of the Levator Ani Muscle.

THE first paper was read by Dr. HENRY JELLETT, and will be found in full on p. 315.

Dr. F. J. MCCANN (London) said that he was in complete agreement with Dr. Jellett's advocacy of the routine suture of the levator ani muscle in operating for prolapse. The levator ani is both the strength and the weakness of the pelvic floor, and any operation which is to restore the latter after laceration must include suture both of the fascia and of the muscle. In the technique of the operation for complete procidentia the first step is the dissection of the anterior vaginal wall from the base of the bladder through an ovoid incision. Then the bladder is separated from the cervix uteri as high as the reflexion of the peritoneum, after which a purse-string suture along the edge of the exposed fascia is inserted. Anterior colporrhaphy is then performed, with or without removal of the cervix, or also of a portion of the anterior vaginal wall. Next the posterior surface of the vagina is opened by an incision starting in the middle line. The whole thickness of the vaginal wal is reflected from the rectum, thus exposing at once the leva ore ani muscles. Redundant vaginal wall is removed. If there is a pronounced rectocele, it is well to suture the fascia alongside the rectum, producing a reef in the rectal wall. Deep silkworm-gut sutures are next passed, but left untied; after that the levatores ani are sutured, beginning behind and passing forwards; care is to be taken that the wound is quite dry before these sutures are tied. The deep sutures are then tied, and superficial skin sutures complete the operation. It is unnecessary to pack the vagina with gauze (as Dr. Jellett had advocated) because hæmorrhage is prevented by the deep sutures.

Derangements of the Knee-joint and their Treatment.

Mr. ROBERT JONES (Liverpool) having introduced this subject (see p. 297), Mr. A. H. TUBBY (London) said that the great factor in the production of internal derangement of the knee is undue lateral movement of the joint, however produced—not necessarily by violence. The necessity for operation is largely discounted if lateral mobility can be entirely prevented. In recent cases, after reduction of the displaced cartilage, Mr. Tubby favours the immobilisation of the leg for three to six weeks in plaster-of-Paris in the extended position. After that a slight degree of flexion may be permitted and gradually increased; but the apparatus cannot as a rule be discarded for six to nine months. As long as tenderness persists the patient should be advised not to walk. "When I decide to operate," he said, "I do it on these grounds: 1. Where the patient is unable to give the necessary time and has not the means to afford the apparatus required for mechanical treatment. 2. Where the patient is unable to obtain his livelihood shackled by a splint. 3. In the case of those who go up ladders, work on scaffolds, or amongst machinery—where a sudden and unexpected fall may be fatal. 4. Where a support has been faithfully tried and has failed. In every case of operation its risks and results should be explained to the patient. I decide not to operate: 1. In any case of primary displacement. 2. Where a patient is content to wear an apparatus for a lengthened period." In his private practice Mr. Tubby operates on only 5 per cent. of his cases of internal derangement. He laid stress on the insufficiency of the popular acetone and iodide method of disinfecting the skin when the knee is the site of the operation.

Mr. ROBERT MILNE (London) remarked that what we wished to know in any given case is what is wrong with the knee-joint. He then detailed the pathological conditions of the internal semilunar cartilage from cases he had met with. Among such conditions were longitudinal splitting of the cartilage (upon the mechanism of this splitting he enlarged at some length); complete separation of the anterior end of the cartilage; a transverse tear and separation of the posterior end of the cartilage. The chief cause of displacement was rotation of the tibia inwards on the femur, and the cardinal symptoms or "tripod" were three—viz., pain, effusion, and locking of the joint. Several photographs were shown illustrating rare causes of internal derangement of the knee-joint.

Transplantation of the Ovaries.

Professor TUFFIER (Paris) explained his methods of transplantation of the ovaries with the object of preventing the onset of the menopause in operations for salpingitis when the uterus is not removed. In the last five years he has done 204 such transplantations, with varying degrees of success. Heterografting, the implantation of an ovary from one patient into another, has not given satisfactory results; but autografting is of great benefit, and Professor Tuffier has done it 145 times. After salpingectomy the ovaries can be left in the pelvis, where they often cause pain; or they can be grafted on to the uterus or under the skin, or into the subperitoneal fat of the abdominal wall. It is the latter operation which he now practises and advocates. The technique of this operation was demonstrated by a series of lantern slides. When it has been performed there is absence

of menstruation, with symptoms of menopause, for about six months. After that time normal menstruation reappears as a rule, though in a few cases it is irregular. For about six to ten days before such periods there is swelling of the transplanted ovaries, which remain normal in structure and function, as shown by examination of such organs after months or years of transplantation. As a result of his observations on cases in which transplantation had been performed, and of experimental researches, Professor Tuffier puts forward a new theory of menstruation. He holds that during the intermenstrual periods a chemical substance accumulates in the blood which acts upon the ovary in such a way that it is altered and is then eliminated in the menstrual flow.

Sir John Bland-Sutton, who was to have taken part in the discussion on Professor Tuffier's paper, had to leave for Aberdeen earlier in the evening. The proceedings terminated with a vote of thanks to the speakers, carried by acclamation.

WEDNESDAY, JULY 29TH.

Typhoid Perforation.

Dr. GEORGE E. ARMSTRONG (Montreal) opened a discussion on this subject by reading a paper which will be found in full on p. 307.

Sir ANTHONY BOWLBY said that Mr. Kenneth Davis had completed for him a survey of all his cases of operation for typhoid ulcer from 1896 to 1913. The results of this survey showed the experience of fatal typhoid accidents to be limited by the diminution of typhoid and typhoid mortality that had taken place in the country. In the decade 1870 to 1880 the deaths from perforation were 23 per cent.; in 1880 to 1890, 20 per cent.; in 1890 to 1900, 17 per cent.; in 1900 to 1910, 9 per cent.; in 1911, 7 per cent.; and in 1912, 4 per cent.; thus showing a total fall from 23 to 4 per cent. in that period. It was different, however, in war, and the South African war had given him a much larger experience of typhoid fever and its surgical accidents. He believed that most cases of supposed recovery after perforation without surgical treatment were not really cases of perforation; perforation was almost invariably fatal without operation. Diagnosis sufficiently early for useful operation could be generally obtained, and prompt operation should be routine treatment. The difficulty of diagnosis was in direct proportion to the severity of the illness—a patient stupefied by toxæmia could not complain. At least 25 per cent. of the deaths were due to perforation, and preliminary arrangements for immediate operation should be kept continually ready in every case of typhoid fever. More than half of all the cases of perforation were not given a chance of operation. Among the premonitory symptoms he mentioned large sudden hæmorrhages as conducing to the liability of perforation. Pain, often very sudden, severe, and diffuse over the whole abdomen, was an important symptom in proportion as the patient was mentally alert; its abeyance was not to be taken as a restorative sign. Having enumerated the symptoms of perforation, Sir Anthony Bowlby said that a blood count should be made two or three times a week as part of the routine examination in typhoid fever. A sudden rise in white-cell count suggested the onset of some inflammatory lesion. He agreed with Dr. Armstrong on the importance of observing the patient's expression, for even if the patient was unconscious he showed a restlessness after perforation contrasting strongly with his previous lethargy. A rigor after the second week should always excite suspicion. In cases of peritonitis without perforation the treatment by operation might be right even though the diagnosis was wrong. He particularly directed attention to the fact that perforation might be multiple, therefore the surgeon should not be content with discovering and dealing with a single perforation. In a series of 30 cases at St. Bartholomew's Hospital eight patients showed the effects of other perforations subsequent to operation on the first.

Results of Operations for Hyperthyroidism.

Dr. CHARLES MAYO (Rochester, U.S.A.) opened this discussion (see p. 301).

Mr. JAMES BERRY (London) said that he should speak chiefly upon the clinical side of the subject, and acknowledged the honour of the invitation to do so. His experiences, he said, were only in hundreds, not in thousands like those of Dr. Mayo. The total number of operations for removal of goitre that he had performed was 966, or, adding operations for ligation of thyroid arteries, a little over 1000. He confessed that, while operating upon ordinary goitres, he had been opposed to operation in exophthalmic goitres, the proceeding being too dangerous. But experience and improvements in technique and in methods of producing anæsthesia, especially local analgesia, had altered his view, though cases must be chosen carefully. Dr. Mayo had taught the need to avoid operations during mental irritability, muscular weakness, and acute cardiac dilation. Mr. Berry held that in many severe cases of Graves's disease ligation of a superior thyroid artery could be safely performed, when larger procedures were unjustifiable, and that it would be found a good step, whether preliminary to subsequent thyroidectomy or no. Partial thyroidectomy, however, was more useful. He divided cases of hyperthyroidism for practical purposes into (1) those with the classic symptoms, and (2) ordinary goitres on which any one or two of these symptoms might be grafted. The second class, not to be included in statistics of operation for true exophthalmic goitre, could be cured by operation with little risk. He had performed 215 operations for hyperthyroidism, he said, since 1912—his experience up to that time being already on record in his Lettsomian lectures. 42 cases were well-marked exophthalmic goitre with 1 death in a man of 50, an old-standing case, emaciated, and with cardiac and cutaneous complications. Among the other 173 there were 2 deaths, in one of which a deep-seated goitre was complicated by pregnancy, while the other had glycosuria. In the cases of ligation of the thyroid arteries no deaths occurred. Nearly all the cases were markedly benefited generally and locally.

B.—SPECIAL SURGICAL DIVISION.

TUESDAY, JULY 28TH.

Laryngo-fissure.

Sir STCLAIR THOMSON briefly introduced Professor Schmiegelow as one who had known England well, having studied over 30 years ago under Sir Morell Mackenzie at the old Throat Hospital and been since in England constantly.

Professor SCHMIEGELOW read a paper which will be found in full on p. 300.

Sir STCLAIR THOMSON gave his experiences of the operation of laryngo-fissure, and pointed out first that it was clear that both the public and the medical profession in Denmark were more alert to discern the conditions which could be relieved by the operation than we were in England, as shown by the number of opportunities which Professor Schmiegelow had had. In England it was common for a patient to be hoarse perhaps for a year before seeking the help of the throat specialist. He endorsed Professor Schmiegelow's teaching and technique entirely, preferring general anæsthesia and preliminary tracheotomy. He also removed the tracheotomy tube before the patient left the table, and got the patient out of bed as soon as possible. He alluded to the interesting fact that one of his successful cases—and he had had no unsuccessful ones in a series of 17 operations for intrinsic cancer of the larynx—developed malignant disease of the parotid gland on the opposite side after seven years' immunity, clearly a new infection. The voices after the operation were as a rule quite good, gradually becoming sonorous. He gave the following synopsis of his cases:—

Cases of intrinsic cancer of larynx treated by laryngo-fissure	17
Deaths from operation	nil
Died from recurrence	2
Recurrence, laryngectomy, and alive 4½ years later	1
No recurrence, including the last-mentioned cases	15
Death from other causes, 15 months, 3 years, 4 years, and 11 years after operation	4
Alive, 7 years after operation	1
,, 5½ ,, ,, ,,	1
,, 4½ ,, ,, ,,	1
,, 3½ ,, ,, ,,	2
,, 2 ,, ,, ,,	1
,, 1¾ ,, ,, ,,	1
,, 9 months ,, ,,	1
,, 8 ,, ,, ,,	1
,, 9 weeks ,, ,,	1
,, 5 ,, ,, ,,	1

In no case did thyrotomy reveal any error of diagnosis;

although a preliminary microscopic examination of a removed portion was only available in six instances.

Intranasal Surgery of the Lacrymal Apparatus.

Dr. J. M. WEST (Baltimore), who had also studied his subject in Berlin in coöperation with Professor Silex, then read an interesting paper on the Intranasal Surgery of the Lacrymal Apparatus, basing his teaching on an experience of 225 operations. He described fully his technique for draining the lacrymal sac by establishing a permanent intranasal opening, passing round a number of "before" and "after" photographs to show the excellent results.

Dr. D. R. PATERSON (Cardiff) narrated experiences extending over nine months with cases of lacrymal stenosis that had been referred to him by his ophthalmological colleagues. He refused to speak dogmatically of the permanency of the relief obtained when all his cases were comparatively recent, but, speaking very hopefully on the point, supported all Dr. West's contentions.

Dr. C. W. RICHARDSON (Washington) then read a long paper on Congenital Atresia of the Post-nasal Orifice, which was discussed by Dr. DUNDAS GRANT.

WEDNESDAY, JULY 29TH.

Three discussions were carried on in the evening. Dr. LOGAN TURNER (Edinburgh) discussed the Application of Skiagraphy to the Mastoid Region, the paper being commented on by Mr. SYDNEY SCOTT (London); Mr. HUGH JONES (Liverpool) considered the Extent of the Operation necessary in Septic Invasion of the Lateral Sinus; and Mr. F. H. WESTMACOTT (Manchester) read a paper on Oculo-Motor Paralysis of Otitic Origin, which we hope to publish in full.

THE EXHIBITION.

The great proportion of the exhibits constituting a little business exhibition in connexion with this Congress consisted of surgical instruments and appliances.

The Surgical Manufacturing Company (85, Mortimer-street, London, W.) showed several convenient forms of sterilisers, and especially a new simple make which leaves the dressings perfectly dry. This seems to us a useful little innovation. They had also a very convenient form of sealed drum for surgical dressings, which is sold filled with sterilised dressings and hermetically sealed; when the dressings are needed the tin is opened by a key which strips off a ribbon of metal, and then the dressings are found enclosed in a gauze bag, which is opened and drawn over the drum, so as to cover up its outer surface and thus prevent any contamination from it. The whole idea was worked out very carefully. Among the instruments shown may be specially mentioned Mayo's probe-pointed scissors; Glegg's nasal snare, in which the handles are kept out of the line of sight; Kocher's modified intestinal clamp, the blades of which are provided with alternate and opposite knobs to prevent the intestine slipping; and a very ingenious universal handle that will take various forceps for nasal, laryngeal, aural, or tonsillar use.

Messrs. Down Brothers (21 and 23, St. Thomas's-street, London, S.E.) showed a large assortment of surgical instruments, and among them may be mentioned the forceps and scissors designed by the brothers Dr. Charles and William Mayo, of Rochester fame. Here also was an ingenious instrument invented by Mr. Lenthal Cheatle for making a counter opening in draining the abdominal cavity, consisting of a large blunt needle to the end of which is attached the drainage-tube, which can thus be placed in position with the minimum of difficulty. The firm also showed a form of rubber tubing, not round, but cruciform in section, so that it cannot collapse completely and become blocked.

The exhibit of the Holborn Surgical Instrument Company (Holborn-circus, London, E.C.) was large and varied, and here also there were on show some neatly made drums for dressings. Some little drums intended for small dressings, as for small operations or for re-dressing an operation wound, struck us as being based on a good idea; their use would obviate the necessity for opening a large drum of dressings when only a small amount of gauze and wool is required.

Messrs. Carl Zeiss (13 and 14, Great Castle-street, London, W.), as agents for Messrs. Wolf, of Berlin, showed a large number of instruments for examining the cavities of the body. There were many cystoscopes with a large field of vision, direct-vision laryngoscopes, and œsophagoscopes. We would especially mention, as having been shown here, a "flexible" gastroscope, which can be passed into the stomach in a perfectly flexible condition and then when it is in position can be straightened. The instrument has also another good point; it has an angle near its upper end which enables the operator to avoid damage to the upper teeth of the patient. A prism at the angle renders vision possible.

Mr. Chas. F. Thackray, of Leeds, was, we believe, the original maker of the instruments devised by Sir Berkeley Moynihan, and many of these were shown at this stall, and especially may be mentioned a very convenient form of syringe for local anæsthesia. Here a very light operating table was on view, which is really portable; for it weighs only 23 lb. complete. It is constructed nearly entirely of duralum metal, though there is a little steel for the rack, by means of which various positions, such as the Trendelenburg position, are obtained.

Messrs. Allen and Hanburys, Limited (48, Wigmore-street, London, W.), had a varied assortment of surgical instruments and appliances, and among them could be found most instruments of recent introduction. They showed a new abdominal retractor and the entire set of Sir Arbuthnot Lane's instruments for the treatment of fractures. Elphick's tonsillotome, designed to obviate hæmorrhage, was also shown here. With this instrument the tonsil is first crushed in the serrated ring of the instrument by a serrated blunt blade, and then severed externally to the crushed part by an ordinary blade. There was also a complete set of instruments devised by Dr. J. F. Percy for the treatment of inoperable carcinoma by heat. The principles of this treatment were the subject of an interesting paper read to the Congress (see p. 309).

The Echols traction apparatus shown by the same firm deserves special mention. This is an apparatus for applying traction to the lower limbs, so that at the same time plaster-of-Paris dress-splints can be applied. It is of great service in fractures of the long bones of the lower extremity, especially the femur; it renders easy the application of plaster casts for tuberculous hip-joints, and it can be very serviceable when applying bone-plates. It consists essentially of two horizontal leg-bars and a vertical perineal post, against which traction is made by means of tackle blocks. The whole apparatus weighs about 25 lb. and it is therefore portable.

Messrs. M. Schaerer and Company (Berne, and 41, Berners-street, London, W.) showed several of their well-known operating tables, which are capable of a multiplicity of movements and yet are very steady. They had also a large selection of surgical instruments, including a novel pair of forceps for applying and removing Michel's suture clips. Makkas's instrument for the temporary arrest of hæmorrhage from the scalp was also shown here; this is a clamp with a strong spring, one limb of the clamp being inserted between the scalp and the bone, and the other lying on the surface; the spring is so strong that a special pair of forceps is needed to open them.

Among the exhibits of Messrs. Mayer and Meltzer (71, Great Portland-street, London, W.) may be mentioned a new form of tonsillotome with a fixed handle; a new gag in which the teeth of the ratchet are protected by a guard; Dr. D. R. Paterson's new set of instruments for nasal dacryocystotomy; Killian's suspension apparatus for direct laryngoscopy, which has been fully illustrated in the columns of THE LANCET; and a new pattern metallic filament electric lamp, giving a clear white light, for laryngoscopy and general surgery.

Messrs. Longmates, Limited (56, Weymouth-street, London, W.), exhibited a large number of their excellent celluloid splints; these are non-inflammable and they are also of extreme lightness, so that they offer no bar to the ambulatory treatment of patients afflicted with bone and joint disease. A spinal jacket, even with an extension apparatus for the head, weighs for a child only some 18 ounces. The introduction of celluloid for splints was a great advance in the treatment of many conditions, and this firm has brought the invention to perfection.

Messrs. Skeffington (49, Ulundi-road, Blackheath) showed several forms of their well-known invalid beds. These are capable of carrying out all the movements which are required in the treatment and nursing of a helpless patient, and that with the minimum exertion on the part of the nurse. There are various types. In one the bed is complete in itself; in another it can be adapted to an ordinary bedstead; in a third there is a portable apparatus which can be placed round a bedstead. The mobile sacrum lifter is also an appliance of great value, and it is intended chiefly for infirmaries; by its use it is possible for one nurse to lift a bedridden patient, and, moreover, the apparatus can be carried about from one bed to another. The Skeffington inclinator also deserves mention; it has the same effect as tilting the bed, and a very oblique position can easily be obtained. The visitors to the exhibition were clearly much interested in this display as the practical side of the mechanical devices was easy to follow, while the various appliances had been designed in a sensible way to meet the wants of the private patient or the patient in a hospital or an infirmary.

The Life Saving Devices Company (Chicago) showed the lungmotor, a device for performing artificial respiration in the asphyxiated. One great merit is its extreme simplicity and the ease with which it can be adjusted according to the patient for whom it is to be used. It is possible to give more or less oxygen with it if thought necessary.

Mr. S. G. Thorman (89, Linden-gardens, London, W.) exhibited the apparatus invented by Dr. Caro for the forced movement of stiff joints. The joints can be made to move by means of levers, and when they have once been moved the movement can be kept up by means of the swinging of a heavy pendulum. It can be applied to any joint of the limbs, including the shoulder-joint, and even rotational movements can be obtained. In a comparatively small apparatus are contained means for dealing with a great variety of conditions.

The C. de Witt Lukens Co. (St. Louis, U.S.A., whose agent in London is Mr. J. Davis, 13, Poland-street, W.) displayed their sterile catgut, prepared by Bartlett's tannic acid process. The advantages claimed for this process over chromic acid and other processes hitherto in use are that the tannic acid gut does not kink, is not hard, and will stand for the full 20 or 30 days before it begins to disintegrate, so that the full value of its stated constricting period is obtained. It is further claimed that unlike other catguts it keeps in sound condition indefinitely, so that it is not necessary to distrust such gut after it ceases to be of recent preparation.

Messrs. John Bell and Croyden, Limited (50, Wigmore-street, London, W.), showed their sterile accouchement outfits, and a model illustrating their sterilising methods and the preparation of a room for accouchement. At the same stall were also shown merlusan (Bayer) tablets, a preparation of tyrosin and mercury which, it is claimed, will produce all the effects when taken internally obtainable by the use of mercury inunction and the injection of grey oil. The combination of tyrosin with the mercury is said to render it much more absorptive. Merlusan bougies were also shown for gonorrhœa.

Mr. Hoefftcke (Woodstock-street, London, W.) showed some extension splints, and skiagrams of cases before and after treatment, the ambulatory method for fractures and diseased joints having had the approval of a good many surgeons. Photographs of a tuberculous left hip and right knee, which had been ankylosed and had been put in extension splints, showed that excellent results can be obtained by the treatment.

The Scholl Manufacturing Company (Giltspur-street, London, E.C.) displayed various foot appliances, including arch supports made of finely tempered German silver, pads designed to promote the disappearance of corns by absorption, and "toe-flex" for the treatment of bunions and for the straightening of toes permanently.

An attractive exhibit was arranged by Messrs. Burroughs Wellcome and Co. (Snow Hill Buildings, London, E.C.), among the products shown being many of particular interest to those who are interested in the application of modern scientific research to manufacturing processes. "Vaporole" "infundin" is a physiologically standardised pituitary extract, safe for use in emergencies. The "tabloid" adjustable head dressing, compressed into waistcoat-pocket size, will commend itself to surgeons for its simplicity of application—it takes but a few seconds to fit on a patient. The exhibitors aptly suggest that it can also be used as a headgear for surgical operators and their assistants.

Other exhibitors less directly surgical in their objects included Messrs. Duncan, Flockhart, and Co., who showed their various excellent pharmaceutical preparations; Sanitas Company and Messrs. Jeyes, whose disinfectants are well known; and Messrs. W. B. Saunders Company, Messrs. Baillière, Tindall, and Cox, and Messrs. D. Appleton and Co., who had on view selections from their numerous medical publications.

In one or two cases interesting exhibits were not to be seen when our representatives called, owing to the absence of the attendants.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the First Professional Examination held on July 14th, 15th, 16th, 17th, and 18th the following candidates were approved in the under-mentioned subjects:—

Chemistry and Physics.—Ralph William Codrington Ball, Middlesex Hospital; Eric John Swithin Bonnett, St. Thomas's Hospital; Martin Vincent Boucaud, St. Bartholomew's Hospital; Osmond Hayman Brown, Charing Cross Hospital and King's College; Alfred John Mackenzie Davies, St. Thomas's Hospital; Tyrrell George Evans, St. Bartholomew's Hospital; Donald Charles Farquharson, St. Mary's Hospital; Blanche Sutton Gardiner, London School of Medicine for Women; William Rufus George Harris and Richard Hilliard, London Hospital; Anthony Bancroft Isaacs, St. Thomas's Hospital; Mahmoud Fahmy Ismail, King's College; Francis Wharton Lemarchand, Royal Albert Memorial College, Exeter; Albert Victor Lopes, St. Bartholomew's Hospital; John Joseph Miles MacDonnell, St. Thomas's Hospital; Charles Moffatt and Richard Burnard Munday, Guy's Hospital; Edmund Jacobsz Papenfus, St. Thomas's Hospital; Jacobus Cornelis Pauw and Eugene Arthur Pearson, London Hospital; Marcel Laurence Quinlivan-Bulger, South-Western Polytechnic; David Hesketh Richards, Liverpool University; John Southmead Rogers King's College; William Rowland Beatty Smyth, Cambridge University and Middlesex Hospital; and Fuad Wanis Zaglama, Manchester University.

Chemistry.—George Wilfred Almeyda, London Hospital; Margarita Sargood Barfield, London School of Medicine for Women; John Francis Edward Burns, Bristol University; Andre Alfred Casalis, London Hospital; Alfred Joseph Chiappa, Middlesex Hospital; Thomas Henry Ronald Davies, University College, Cardiff; Arthur James Fenn, Birkbeck College; Malik Girgis, B.A., King's College; Arthur Richard Necklo, Guy's Hospital; Ina Valentine Vincent, London School of Medicine for Women; and Henry Winslow Woollett, London Hospital.

Physics.—Francis Joseph Biddle, Guy's Hospital; Arnold Edgar Collie, M.A. Cantab., Middlesex Hospital; Frank Edward Edwards, Manchester University; Ahmed Faiq and Rupert Vaughan Hudson, Middlesex Hospital; Clement Nicory, St. Thomas's Hospital; Arthur Arnold Osman, Guy's Hospital; Hussein Ramzy, King's College; Khurshedjee Jamsedjee Rustomjee, Liverpool University; Malcolm Catchick Sarkies and Osbert Lacon Carden Sibley, Middlesex Hospital; Ernest Algernon Sparks, St. Thomas's Hospital; Ernest Arthur Leland Sturridge, Middlesex Hospital; Philip Harding Williams, Reading University College; and Sidney Wolff, Guy's Hospital.

Biology.—Francis Joseph Biddle, Guy's Hospital; Leonard Birtles and Alfred John Mackenzie Davies, St. Thomas's Hospital; Bryan Osmond Dewes, Birkbeck College; Louis Dinerstein, London Hospital; Gerald Hinds Duffield, Birmingham University; Arthur Patrick Halladay Egerton, Leeds University; Malik Girgis, B.A., King's College; Edwin Spencer Goodwin, Guy's Hospital; Vivian Arthur Frederick Greenish, L.D.S. Eng., Middlesex Hospital and Birkbeck College; George Raymond Hubbard, Guy's Hospital; Ernest Langton Hunter, South-Western Polytechnic; Mahmoud Fahmy Ismail, King's College; Henry Stewart Jackson, London Hospital; Ernest Kopelowitz, Guy's Hospital; Wright Lambert, Middlesex Hospital; Basil Leslie Laver, Guy's Hospital; John Crawford William MacBryan, St. Bartholomew's Hospital; Guy Meadows, Guy's Hospital; Noel Francis Meldrum, Middlesex Hospital; Richard Burnard Munday, Guy's Hospital; Jacobus Cornelis Pauw, London Hospital; Alfred Peine, Birmingham University; John Peter, Birkbeck College; David Hesketh Richards, Liverpool University; Osbert Lacon Carden Sibley, Middlesex Hospital; Mohamed Sidky, St. Thomas's Hospital; Ronald Edward Williams, Guy's Hospital; and Israel Hyman Zortman, B.Sc., Ph.D., London Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Preliminary Science Examination for the Licence in Dental Surgery held on July 14th, 16th, and 17th the following candidates were approved in the under-mentioned subjects:—

Chemistry and Physics.—Alexander Benjamin Aldred, Wandsworth Technical Institute; Walter Samuel Beauchamp, Birkbeck College; Leonard Harry Bradbeer, Royal Albert Memorial College, Exeter; Ernest William Carr, Wedgwood Institute, Burslem; Frank Wheatley Cowley, Hymers College, Hull; Leslie Douglas Crabb, Guy's Hospital; Harold James Dawes, B.A. Cantab., Birmingham University; William Dingley, Guy's Hospital; Arnold Sidney Dod, Liverpool University; Arthur William Dolamore, Royal Dental Hospital; Frederick John Downing, Norwich Technical Institute; Alan Evelyn, Polytechnic Institute; Frederick John Farmer, Derby Technical College; John Eskdale Fishburn, Municipal College, Portsmouth; Hilton George Fisher, Leamington Technical School; Fred Eric Vernon Francis, Birmingham Municipal Technical School; Frederic Clifford Gardenner, University College, Reading; Arthur Gordon, Guy's Hospital; Arthur Robert Hill, Royal Dental Hospital; Robert Ernest Murray Hofmeyr, South African College and Royal Dental Hospital; William Lawrence Holdcroft, Wedgwood Institute, Burslem; Horace Leonard Ide, Birkbeck College; John Christopher Johnson and Roy Victor Kingham, Guy's Hospital; Frank Lockwood, Harris Institute, Preston; Amin Maher, Guy's Hospital; Edgar Hamilton Muir-Smith, Municipal Technical College, Brighton; Cyril Stanley Neame, Polytechnic Institute; Edmund Boyd Osmer, Wandsworth Technical Institute; Edward Alfred Penney Parker, Guy's Hospital; Edmund Arthur Reeve, Sheffield University; Sydney Kilshaw Rigg, Bristol University; Bernard Arthur Rilot, Royal Dental Hospital; Thomas Henry Roberts, Eastern District Secondary School, Douglas; Edgar Samuels, Royal Albert Memorial College, Exeter; Cyril Fryer Smith, Liverpool University; Hugh Muir Smith, Guy's Hospital; Ronald Granville Tame, Municipal College, Bournemouth; Granville Henry Teall, Birmingham Technical School; Stanley Carlyle Turner, Municipal College, Bournemouth; Leonard Gould Whelpton, Guy's Hospital; Sydney Whitworth, Salford Royal Technical Institute; and Walter Reginald Wotton, Cheltenham Grammar School.

Chemistry.—Victor Henry Ball, Polytechnic Institute; Edward Tong Crosoer, King's College; John Beswick Drury, Polytechnic Institute; Alwyn Norman Goudge, Bournemouth Municipal College; Noel Hardcastle Hillyard, Leeds University; Israel Jacobs, Bristol University; Gerald John Jonas, Brighton Municipal Technical College; Eric Herbert Laurence, Gloucester Municipal School; Johann Lodewijk te Water Naudé, Royal Dental Hospital; Weatherill Abbott Strickland, Birkbeck College; Herbert Newton Tiplady, Leeds Technical School; Lionel Huet Broen Turner, Towyn County School; and David Cornelius van der Spuy, Guy's Hospital.

Physics.—Hubert John Vere Raywood Allin, King Edward's School, Birmingham; John Hulme Allwood, Liverpool University; Ernest Cecil Bevis, Portsmouth Municipal College; Albert James Constance, Bristol University; William Ashley Cooper, Birmingham University and Guy's Hospital; Pieter Jacob Stephanus de Wet, B.A., Guy's Hospital; Leonard Allen Doughty, Wandsworth Technical School; Herbert Vincent Fisher, Liverpool University; John Herbert, Guy's Hospital; Bartle Leathlean, Bristol University; Ernest Findlay Shaw, Guy's Hospital; and Thomas Everett Withers, Polytechnic Institute.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following gentlemen having passed the requisite examinations have been admitted Fellows of the College:—

Robert Bertram Blair, Joseph Jopling Brown, Arthur Barrett Cardew, Harry Alexander Gibson, Dwarka Prasad Goil (Captain, I.M.S.), William Wells Greer, Allan George Hamilton, Leonard Hirsch (Captain, I.M.S.), John Honeyford, Ernest Henry Howard, Gerald Lewis Little (Captain, I.M.S.), James McClellan, John Dugald MacEwen, Ernest Muir, and James Bowman Wilkie.

The following gentlemen have obtained the single Licence of the College:—

Thomas Jefferson Williams, M.D., and Vinayak Laxman Sathe, L.M. & S. Bombay.

UNIVERSITY OF LONDON.—At examinations held in July the following candidates were successful:—

M.D. EXAMINATION.

Branch I., Medicine.—John Lloyd Davies, B.S. (University medal), University College Hospital; Evan Parry Evans, B.S., University College, Cardiff, and London Hospital; Charles Jennings Marshall, B.S., Charing Cross Hospital; Ernest Spencer Miller, B.S., University of Liverpool; and Margaret Grace Thackrah, B.A., B.S., London (Royal Free Hospital) School of Medicine for Women.

Branch III., Mental Diseases and Psychology.—Charles Stanford Read, University College Hospital.

Branch IV., Midwifery and Diseases of Women.—Maud Frances Forrester-Brown, Edith Mary Guest, B.S., and Susie Eleanor Hill, London (Royal Free Hospital) School of Medicine for Women; Frederic James Humphrys, B.S., St. Thomas's Hospital; Raymond Montgomery, B.S., University of Leeds and Guy's Hospital; Ambrose Wilfred Owen, B.S., St. Mary's Hospital; and Mary Cowper Scott, B.S., London (Royal Free Hospital) School of Medicine for Women.

Branch V., State Medicine.—Herbert Leslie Hopkins, Guy's Hospital.

Branch VI., Tropical Medicine.—Michael Foster Reaney, London Hospital and London School of Tropical Medicine.

M.S. EXAMINATION.

Branch I., Surgery.—Harold Gardiner and Vincent Glendining, Guy's Hospital; Norman Claudius Lake, M.D., B.Sc., Charing Cross Hospital; Philip Henry Mitchiner, St. Thomas's Hospital; Alan Herapath Todd, B.Sc., Guy's Hospital; and John Black Ferguson Wilson, University of Leeds.

N.B.—This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

CLINIQUE MÉDICALE OF THE HÔTEL DIEU, PARIS.—The next cours de vacances will take place, under the direction of Professor A. Gilbert and Professor Agrégé M. Villaret, at the Amphithéatres Trousseau and Bichat, beginning Monday, Sept. 28th. The course will comprise demonstrations and lectures on diseases of the liver, blood tension, paraplegia, hemiplegia, and tabes dorsalis, tuberculosis, typhoid fever, cardiac arrhythmias, and the methods of examination in disorders of the circulatory system and cardiac therapeutic agents, syphilis, the chemistry of the intestinal functions, examination of the kidneys, acute and chronic meningitides, and pleural and peritoneal effusions; also bacteriology and hæmatology, both general and in relation to venereal and other diseases, urinary examination, and certain special diagnostic and therapeutic methods, such as electro-diagnosis, Widal's, Wassermann's, and Weinberg's reactions, X rays and radium, thermotherapy, and massage in painful affections. The inaugural lecture will be given by Professor Agrégé Maurice Villaret, at 10 A.M., on Sept. 28th. The remaining classes will be held daily at 10.30 A.M. and 3 P.M. by M. Villaret, M. Dumont, M. Herscher, M. Bénard, M. Chabrol, M. Lippmann, M. Paul Descomps, M. Deval, M. Pierret, M. Grivot, M. Guilleminot, M. Dausset, M. Jomier, and M. Durey. The course which will be individual and practical, will consist of 30 lessons, occupying 15 days, and will be illustrated by photographic, kinematographic, and microscopical displays, with presentation of patients and instruments. A certificate will be given on completion of the course. The subscription of 100 francs should be sent to M. Deval, Chef de Laboratoire, Hôtel Dieu, Paris. The course is open to foreign medical men.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Housing Bill.

A SECOND reading has been given by the House of Commons to the Housing Bill of the Government.

Asylums Officers' Superannuation Bill.

A Bill to "amend the Asylums Officers' Superannuation Act, 1909," has been introduced in the House of Commons by Mr. DUNCAN MILLAR. It has the support of Sir JOHN JARDINE, Sir CHARLES NICHOLSON, Mr. BARNES, Captain GILMOUR, Mr. WILLIAM REDMOND, Mr. CROOKS, Sir JOHN BETHELL, and Captain CAMPBELL. It has been read a first time.

HOUSE OF COMMONS.

WEDNESDAY, JULY 22ND.

The Nursing Grant.

Mr. CHARLES BATHURST asked the Chancellor of the Exchequer whether it was proposed to make the county and borough councils or the Insurance Committees the authorities for the administration of the proposed Government nursing grant; and whether any use would be made of the county nursing associations in establishing a county nursing service with the aid of such grant.—Mr. MONTAGU (on behalf of Mr. LLOYD GEORGE) replied: The service referred to will be administered by the Insurance Commissioners through the Local Insurance Committees. It is hoped to secure the coöperation of the county nursing associations.

Middlesex Insurance Committee.

Mr. NIELD asked the honourable Member for St. George's-in-the-East, as representing the Insurance Commissioners, whether he was aware that the Middlesex Insurance Committee had persistently refused applications of insured persons to make their own medical arrangements.—Mr. WEDGWOOD BENN answered: A discretion is vested in the Insurance Committee in dealing with any such application.

Mr. BOOTH: Is my honourable friend not aware that the Middlesex Insurance Committee does its work exceedingly well, and does he not think it would be very inadvisable to

remove any portion of its local autonomy?—Mr. WEDGWOOD BENN: Yes, sir, the Middlesex Insurance Committee is a very capable committee, and the Commissioners have no intention of interfering with its autonomy.

The Medical Arrangements of Insured Persons.

Mr. NIELD asked the honourable member for St. George's-in-the-East why, in the event of a pool proving insufficient to pay the claims upon it, the drug bill was paid in full and only a dividend was paid on medical charges; and what was the reason for favouring the chemists at the expense of and penalising the medical men who were in attendance on insured persons entitled to make their own medical arrangements.—Mr. WEDGWOOD BENN said in reply: The honourable member is under a misapprehension. The arrangement to which he refers is the prescribed method of calculating the Insurance Committee's contribution to the insured person, who is himself responsible for the bills he has incurred.

Mr. GLYN-JONES: May I ask the honourable gentleman whether he is aware that insured persons who asked to be allowed to make their own arrangements were informed that one of the conditions would be that probably there would not be enough money in the pool to pay their doctors?—Mr. WEDGWOOD BENN: Yes, I believe insured persons who did not want to take advantage of the panel doctors provided by the Act are warned that it may result in their having to pay the balance necessary to pay their own doctors.

Mr. NIELD asked the honourable Member whether, in view of the insolvency of so many pools of insured persons making their own medical arrangements, the Commissioners, out of the large surplus in their hands or under their control created by persons from whom and from whose employers compulsory levies were made under the National Insurance Act, but who had continued to provide and pay for the medical services rendered to them independently of the Act, would appropriate some portion of that fund in aid of those persons who, having paid their contributions, were unable to obtain the promised benefits.—Mr. WEDGWOOD BENN replied: I would refer the honourable Member to the provisions of Section 15 (3) of the National Insurance Act, 1911, which preclude the adoption of the course suggested.

Sanatorium Treatment for Post Office Staff.

Mr. MOUNT asked the Postmaster-General what provision for sanatorium treatment was made for established servants of the Post Office.—Mr. HOBHOUSE answered: The medical attendance provided by the Post Office for its staff does not include sanatorium treatment. About one half of the established staff are voluntary subscribers to the Post Office Sanatorium Society, an unofficial society controlled by the members themselves. I understand that the staff in return for the subscription of 2*s.* a year are able to obtain sanatorium treatment when required without delay for as long as may be necessary.

Sir RYLAND ADKINS: Does that apply to the employees generally?—Mr. HOBHOUSE: It applies to those who subscribe an annual amount to the society.

THURSDAY, JULY 23RD.

Sanatorium Benefit.

Mr. CHARLES BATHURST asked the honourable Member for St. George's-in-the-East, as representing the Insurance Commissioners, whether the Commissioners had received resolutions passed by the Insurance Committees of London, Birmingham, Halifax, and other boroughs in support of the proposal to place the insured person who was being treated in a sanatorium in the same position as one who was being treated in an ordinary hospital as regarded the application of his benefits; and, if so, what action did the Commissioners propose to take in this matter.—Mr. WEDGWOOD BENN said in reply: Resolutions of the kind described in the first part of the question have been received from certain Insurance Committees. With regard to the second part of the question the Commissioners have no power to take any action.

Sanatorium Benefit in Dumbartonshire.

Replying to Mr. BARNES, Mr. MCKINNON WOOD (Secretary for Scotland) said that it was the fact that the Insurance Committee of the county of Dumbarton had declined to recommend for sanatorium treatment certain insured persons suffering from tuberculosis, and that the local authority of the burgh of Kirkintilloch had not yet agreed to treat those cases. From the information before them the Local Government Board for Scotland were not satisfied that certain cases were being properly treated, and they were in communication with the local authority on the whole subject.

Prescribing under the Insurance Act.

The Marquis of TULLIBARDINE asked the honourable Member for St. George's-in-the-East whether the chemists in Northumberland had been told by the Northumberland Insurance Committee that, should there be a deficit at the end of the year caused by excessive prescriptions, the chemists were the people who would suffer, as their bills would not be paid; and whether he would say what redress a chemist had if the doctors upon the panel prescribed beyond the limits of the Regulations, and why was the chemist to be held responsible for the error.—Mr. WEDGWOOD BENN answered: My right honourable friend is not aware of any such statements, the reports to which his attention has been drawn being to the effect that if excessive prescribing were permitted to continue the chemists would suffer a loss. The Regulations contain provisions (to which the Insurance Committee also alluded) enabling the cost of excessive prescribing to be surcharged against the doctors responsible.

The Marquis of TULLIBARDINE: May I send to the honourable gentleman the official document which contains the very words embodied in my question?—Mr. WEDGWOOD BENN: I shall be glad to have any document which the noble lord may wish to send me.

A Small-pox Outbreak.

Mr. ALBERT SMITH asked the President of the Local Government Board whether the stream near the mill at Milnrow, where small-pox recently broke out, was notorious for its insanitary condition; whether he was aware that the council had a tip on which sanitary carts had been emptied close by, and that the tip had been on fire for seven weeks and had given off a disgusting stench; would he say how it was possible to decide there was no epidemiological fact supporting the idea that small-pox could originate from such a source when the circumstances had not been investigated; and whether the general liability to small-pox in the United Kingdom had decreased in proportion as the Public Health Acts had been enforced.—Mr. HERBERT SAMUEL replied: According to my information the condition of the stream is not exceptional compared with other streams in the mill districts of Lancashire. The nearest tip of the council is a quarter of a mile away. The tip has not been on fire recently, and it has no connexion with the stream. I am advised that general medical knowledge was sufficient to enable it to be stated that there are no epidemiological facts supporting the theory that small-pox can originate in the manner suggested. It is fortunately true that during recent years greater attention has been devoted to perfecting public health administration and that during that time there have been fewer serious outbreaks of small-pox.

MONDAY, JULY 27TH.

Middlesex Insurance Committee.

Mr. NIELD asked the honourable Member for St. George's-in-the-East, as representing the Insurance Commissioners, what was the reason for the delay in ascertaining the amount of the special arrangements fund in Middlesex available for distribution in respect of claims arising in the year 1913; had the whole of the claims been received; and, if so, what was the date when the last of such claims was received. The honourable Member also asked whether all the claims upon the special arrangement fund under the control of the Middlesex committee out of which Dr. J. Chambre, of South Ealing, was entitled to be paid for attendance upon 29 persons, members of the District Railway staff, had been sent in; when was the last received; what was the reason for withholding payment as long ago as 1913; and would the Insurance Commissioners take steps to secure to the committees better administration of the Act.—Mr. WEDGWOOD BENN answered: Payment has been made to all insured persons entitled to a contribution from the special arrangements fund, except those who have made their own arrangements with the particular doctor referred to. In their case the Insurance Committee are endeavouring, for the special convenience of the doctor and in accordance with his wishes, to obtain the insured persons' consent to payments being made to the doctor direct.

Medical Benefit and Proprietary Tonic Foods.

Mr. W. THORNE asked the honourable Member for St. George's-in-the-East whether medical benefit to insured persons included the provision of proprietary tonic foods; whether he was aware that in certain conditions of ill-health drugs were of little value, and that effective treatment could often be given with suitable concentrated food; and whether he would allow medical practitioners at their discretion to prescribe on the lines indicated.—Mr. WEDGWOOD BENN said in reply: Insured persons are entitled to proper and sufficient medicines as part of their medical benefit, and the question whether any particular compound or preparation is included within that category falls for decision in the first instance by the Insurance Committee on the circumstances of the individual case.

Payment of Chemists.

Mr. FRED HALL (Dulwich) asked the honourable Member for St. George's-in-the-East whether the bills of chemists supplying drugs under the National Insurance Act had been heavily discounted in districts where sufficient funds were

not available to pay them; whether the accounts of the doctors had been similarly dealt with; whether the charges for drugs were settled before the names of the chemists were placed upon the approved lists; whether such discounting had in any case been due to overcharging; if so, whether chemists overcharging had been warned; and whether there were any grounds for introducing variations of prices in different districts.—Mr. WEDGWOOD BENN answered: The chemists in some areas have been paid under discount pending the result of the scrutiny in progress. The doctors are, however, paid on a different basis and no such question arises in their case. In the normal course the tariff is settled, in substance at any rate, before the chemists renew their agreements, but in some cases details have been left for subsequent settlement by general consent. If by overcharging I correctly understand the honourable Member to mean pricing inaccurately and not in accordance with the tariff, such errors are discovered and adjusted when the accounts are examined. In reply to the last part of the question, if the honourable Member will give particulars of any cases he has in mind I will make inquiries.

Sanatoria Grants.

Mr. WORTHINGTON EVANS asked the President of the Local Government Board how many new sanatoria have been built by means of grants from the £1,500,000 provided by the Finance Act, 1911, and how many were in course of erection.—Mr. HERBERT SAMUEL replied: So far as England is concerned the number of cases in which building is being aided by capital grants is 69. The work has been completed in 22 cases. In the remaining cases the plans have been approved by the Local Government Board, and in most of them, I assume, the buildiugs are in course of erection. In addition 14 sites have been approved for the erection of new sanatoria.

TUESDAY, JULY 28TH.

Overcrowded Schoolrooms and Disease.

Mr. KING asked the President of the Board of Education how many elementary schools, comprising how many school places, were still assessed on the 8 square feet per scholar basis; and whether, in view of the fact that overcrowded classrooms predisposed the children educated in them to tuberculosis, he would issue a circular fixing a date next year for assessing all schools on the 10 square feet basis.—Mr. J. A. PEASE replied: In the Board's annual report for 1909-10 it was stated that outside London the reassessment of public elementary schools upon the basis of 10 square feet per head for older scholars and 9 square feet for "infants" was practically completed. There are only a very few cases in which the reassessment has not come into force pending alterations to premises and the erection of new schools. In London the reassessment will be made as part of the scheme for reducing all classes to 40 or 48 places for older children and infants respectively. I do not think the labour involved in ascertaining the precise number of cases still outstanding would be justified under the circumstances, nor does it appear to me necessary to issue a circular on the subject.

Tuberculosis Treatment for the Metropolitan Police.

Answering Dr. ADDISON, Mr. MCKENNA (the Home Secretary) wrote: Prompt measures are taken in cases of suspected or early tuberculosis in the metropolitan police; and arrangements have for some years been in existence by which such cases are at once transferred to suitable hospitals or sanatoria for observation or for treatment as each may require. The hospital established for the City Police Force no doubt serves satisfactorily for a comparatively small force concentrated in an area of one square mile, but to establish special hospitals to serve the whole metropolitan area of some 700 square miles would be a most costly expedient and it would not yield such good results as the present system under which sick police had the benefit of treatment in the great hospitals of London which place at the disposal of the sick the services of the most distinguished surgeons and physicians of the metropolis. For every man in hospital a subscription of a guinea a week is paid out of the Police Fund.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BOURNE, A. W., M.B., B.C. Cantab., F.R.C.S. Eng., has been appointed Obstetric Surgeon to Out-patients at St. Mary's Hospital.

ELLIOT, T. S., L.R.C.P. Lond., M.R.C.S., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Southwell District of the county of Nottingham.

GAZDAR, GERTRUDE, M.B., B.S. Lond., has been appointed Curator of the Museum at the Royal Free Hospital.

HOLT, H. M., M.R.C.S., L.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Malton District of the county of York.

LLOYD, MURIEL A., M.B., B.S. Lond., has been appointed Assistant Anæsthetist at the Royal Free Hospital.

MILLS, CLAUDE HARRY, M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Assistant Surgeon to St. Paul's Hospital for Skin and Genito-Urinary Diseases, Red Lion-square, W.C.

NEIL, J. CAMPBELL, M.B., Ch.B Edin., has been appointed Junior House Surgeon at the Blackburn and East Lancashire Royal Infirmary.

NEILL, A. W., M.D., Ch.B. Edin., has been appointed Physician-Superintendent of Warneford Asylum, Oxford.

NEWSHOLME, H. P., M.B., Ch.B. Oxon., B.Sc. Lond., M.R.C.P., D.P.H., has been appointed Assistant Medical Officer of Health to the Surrey County Council.

PIRRIE, R. REID, M.D. Durh., has been appointed Visiting Medical Officer to the Northern Counties Joint Poor-law Colony for the Feeble-Minded and Epileptic at Prudhoe Hall, Northumberland, and Visiting Physician in charge of the Durham County Council Sanatorium at Sealburn, Ryton-on-Tyne.

PLATT, KATE ANNE, M.B., B.S. Lond., has been appointed Principal of the new Queen Mary Medical College at Delhi.

STANFORD, W. BEDELL, M.D. Durh., M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Medical Officer to the King Edward Memorial Hospital, Ealing.

VINER, G., M.D. Lond., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Royal Westminster Ophthalmic Hospital.

WALKER, L. CECIL, M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer of Health for the Combined Districts of Malton and Norton, Yorks.

WALKER, NORMAN H., M.D., B.S. Lond., D.P.H. R.C.P.S., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Medical Officer of Health to Durban Corporation, Durban, Natal.

WHITEHORNE-COLE, A. G., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Cancer Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ASHTON-UNDER-LYNE DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—Assistant House Surgeon. Salary £100 per annum, with board, residence, and laundry.

BANBURY, HORTON INFIRMARY.—House Surgeon. Salary £120 per annum, with board and residence.

BARROW-IN-FURNESS, NORTH LONSDALE HOSPITAL.—House Surgeon. Salary £150 per annum, with residence, board, and laundry.

BEDFORD COUNTY HOSPITAL.—Assistant House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Senior House Surgeon. Salary £120 per annum, with board and laundry.

BIRMINGHAM, QUEEN'S HOSPITAL.—Secretary and General Superintendent. Salary £400 per annum.

BOOTLE BOROUGH HOSPITAL.—Senior and Junior House Surgeons. Salaries £120 and £100 respectively, with residence, board, and laundry.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—Physician.

BRADFORD CITY EDUCATION COMMITTEE.—Chief School Dentist. Salary £350 per annum.

BRADFORD CITY HOSPITAL FOR CONSUMPTIVES.—Resident Medical Officer. Salary £200 per annum, with board and residence.

BRADFORD ROYAL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and washing.

BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-Resident House Surgeon for six months. Salary at rate of £150 per annum.

BRISTOL CITY ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £200 per annum, with apartments, board, washing, and attendance.

BROADMOOR STATE CRIMINAL LUNATIC ASYLUM, Crowthorne, Berks.—Junior Assistant Medical Officer, unmarried. Salary £225 per annum, with quarters, coal, gas, and attendance.

BURY ST. EDMUNDS, WEST SUFFOLK GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £120 per annum, with board, lodging, and laundry.

CALCUTTA CORPORATION.—Assistant Health Officer. Salary Rs.700 per mensem.

CAMBERWELL INFIRMARY AND GORDON-ROAD INSTITUTION.—Assistant Medical Officer. Salary £200 per annum. Also Assistant Medical Officer for Infirmary. Salary £190 per annum. Apartments, board, and washing in each case.

CANCER HOSPITAL, Fulham-road, S.W.—House Surgeon for six months. Salary £70 per annum.

CAPETOWN, SOMERSET HOSPITAL.—Assistant Medical Officer. Salary £200 per annum, with rations and quarters.

COLCHESTER, ESSEX COUNTY HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

CROYDON BOROUGH HOSPITAL FOR INFECTIOUS DISEASES.—Assistant Resident Medical Officer. Salary £150 per annum, with board, residence, and laundry.

DERBY, DERBYSHIRE HOSPITAL FOR SICK CHILDREN.—Female Resident Medical Officer. Salary £80 per annum.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried, Salary £150 per annum, with board and laundry.

DOWNPATRICK, DOWN DISTRICT LUNATIC ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £170 per annum, with apartments, board, washing, attendance, &c.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—House Physician for five months. Salary at rate of £75 per annum, with board, residence, and washing.

FAREHAM, HANTS COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £250 per annum, with apartments, board, washing, and attendance.

GLAMORGAN COUNTY COUNCIL COMMITTEE FOR THE CARE OF THE MENTALLY DEFECTIVE.—Medical Officer. Salary £300 per annum.

GREENWICH UNION INFIRMARY AND WORKHOUSE.—First Assistant Medical Officer, unmarried. Salary £175 per annum, with apartments, rations, and washing.

HELLINGLY, EAST SUSSEX COUNTY ASYLUM.—Third Assistant Medical Officer. Salary £250 per annum, with board, lodging, washing, and attendance.

HOSPITAL FOR WOMEN, Soho-square.—Clinical Assistants in Out-patient Department.

HULL ROYAL INFIRMARY.—Senior House Surgeon, unmarried. Salary £150 per annum, with board and apartments. Also Assistant House Surgeon. Salary at rate of £100 per annum, with board and lodging.

INVERNESS, NORTHERN INFIRMARY.—House Surgeon. Salary £100 per annum, with board, &c.

KIRKMABRECK PARISH, Creetown, Kirkcudbrightshire.—Medical Officer. Salary £40 per annum.

LANCASTER ROYAL INFIRMARY.—House Surgeon, unmarried. Salary £110 per annum, with residence, board, attendance, and washing.

LEAMINGTON SPA, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL.—House Physician. Salary £85 per annum, with board, residence, and laundry.

LEEDS, CITY HOSPITALS FOR INFECTIOUS DISEASES AND TUBERCULOSIS.—Two Assistant Medical Officers, unmarried, for six months. Salary at rate of £130 per annum each, with board, lodging, and washing.

LEEDS TUBERCULOSIS ASSOCIATION SANATORIUM, Gateforth, near Selby.—Resident Medical Officer for six months. Salary at rate of £100 per annum, with board, lodging, and washing.

LEICESTER, NORTH EVINGTON POOR-LAW INFIRMARY. — Senior Assistant Medical Officer and Junior Assistant Medical Officer. Salaries £200 and £150 per annum respectively, with apartments, rations, laundry, and attendance.

LEICESTER ROYAL INFIRMARY.—Assistant House Surgeon for six months. Salary at rate of £100 per annum, with board, apartments, and washing.

LIVERPOOL EDUCATION COMMITTEE.—Two Assistant School Medical Officers. Salary at rate of £250 per annum.

LONDON LOCK HOSPITAL.—House Surgeon to Female Hospital, Harrow-road, W. Salary £100 per annum, with board, residence, and washing.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant House Surgeon for six months. Salary at rate of £105 per annum. Also Assistant Resident Medical Officer for six months. Salary at rate of £80 per annum, with board, residence, and washing.

MAIDSTONE, KENT COUNTY OPHTHALMIC HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and laundry.

MAIDSTONE, WEST KENT GENERAL HOSPITAL. — Assistant House Surgeon, unmarried. Salary £80 per annum, with board, lodging, &c.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Resident Medical Officer, unmarried, for six months. Salary at rate of £100 per annum.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST.—Resident Medical Officer for In-patient Department, Bowdon, Cheshire. Salary £100 per annum, with board, apartments, washing, &c.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £180 per annum, with apartments, attendance, coal, and gas.

MANCHESTER, MONSALL FEVER HOSPITAL.—Fourth Medical Assistant. Salary £150 per annum, with board, lodging, and washing.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with apartments and board.

MANCHESTER ROYAL EYE HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with residence, board, and washing.

MANCHESTER ROYAL INFIRMARY.—Medical Officer for Out-Patients and Accidents for six months. Salary at rate of £100 per annum, with board and residence.

MANCHESTER, ST. JOHN'S HOSPITAL OF MANCHESTER AND SALFORD FOR THE EAR.—Honorary Clinical Assistants.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—House Surgeon and Assistant House Surgeon for six months. Salary at rate of £60 and £40 respectively, with board and washing.

MILLER GENERAL HOSPITAL FOR SOUTH EAST LONDON. Greenwich-road, S.E.—Junior House Surgeon for six months. Salary at rate of £85 per annum, with board, residence, and laundry.

NEWARK-UPON-TRENT HOSPITAL.—Resident Medical Officer, unmarried. Board, lodging, and laundry provided.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Medical Registrars and Surgical Registrars. Salary at rate of £50 per annum.

NOTTINGHAM, BAGTHORPE INSTITUTION AND INFIRMARY.—Resident Assistant Medical Officer, unmarried, for six months. Salary at rate of £165 per annum, with apartments, &c.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £180 per annum, with apartments (not board), attendance, light, and fuel.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Physician for six months. Salary at rate of £100 per annum, with board, residence, and laundry.

OLDHAM ROYAL INFIRMARY.—Senior House Surgeon and Third House Surgeon for six months. Salary at rate of £140 and £100 per annum respectively, with residence, board, and laundry.

OXFORD, CITY OF.—Assistant Medical Officer of Health and School Medical Officer. Salary £300 per annum.

PAISLEY INFECTIOUS DISEASES HOSPITAL.—Resident Medical Officer. Salary £150 per annum, with board, washing, and attendance.

PUTNEY HOSPITAL, Putney Common, S.W.—Resident Medical Officer. Salary £100 per annum, with rooms, board, and laundry.

ROCHDALE INFIRMARY AND DISPENSARY.—Senior House Surgeon, unmarried. Salary £120 per annum, with board, residence, and laundry.

ROUSAY AND EGILSHAY, PARISH OF.—Resident Medical Officer. Salary £61 sterling per annum, with house (partly furnished) and garden. From Medical Association £30.

ROYAL EDINBURGH ASYLUM, Morningside.—Assistant Physician Salary £175 per annum.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Female Assistant to Pathologist. Salary £150 per annum.

ROYAL NAVAL MEDICAL SERVICE.—Twenty-five Appointments.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, S.E.—Junior Resident Medical Officer. Salary at rate of £70 per annum, with board and washing. Also Senior Resident Medical Officer. Salary at rate of £90 per annum, with board and washing.

ST. BARTHOLOMEW'S HOSPITAL TUBERCULOSIS DISPENSARY FOR THE CITY OF LONDON, &c.—Medical Officer. Salary £300 per annum.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Assistant Resident Medical Officer. Salary at rate of £100 per annum, with board, residence, and laundry.

ST. MARY'S HOSPITAL, Paddington, W.—Resident Assistant Anæsthetist for six months. Salary at rate of £100 per annum, with board and residence.

SALFORD ROYAL HOSPITAL.—Junior House Surgeon and Casualty House Surgeon. Salary at rate of £100 per annum each, with board and residence.

SALFORD UNION INFIRMARY.—Resident Assistant Medical Officer, unmarried. Salary £150 per annum, with apartments, attendance, and rations.

SALISBURY (GENERAL) INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and lodging.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Senior and Junior House Surgeons. Salaries £100 and £80 per annum respectively, with board, residence, &c.

SHEFFIELD, EAST END BRANCH OF THE CHILDREN'S HOSPITAL (OUT-PATIENT DEPARTMENT).—House Surgeon. Salary £120 per annum, with board and residence.

SOUTHEND-ON-SEA COUNTY BOROUGH.—Assistant Medical Officer. Salary at rate of £250 per annum.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £115 per annum, with residence, board, and washing.

SOUTHWARK UNION INFIRMARY, East Dulwich-grove. S.E.—Third Assistant Medical Officer. Salary at rate of £160 per annum, with board, lodging, and washing.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—House Physician and Casualty and Out-patient Officer, unmarried, for six months. Salary at rate of £120 per annum each, with board, residence, and washing.

STOKE-UPON-TRENT UNION INSTITUTE AND HOSPITAL, London-road, Newcastle, Staffs.—Assistant Resident Medical Officer, unmarried. Salary £160 per annum, with rations, apartments, and washing.

SUNDERLAND ROYAL INFIRMARY.—House Physician and Junior House Surgeon. Salaries £120 and £100 per annum respectively, with board, residence, and laundry.

SWANSEA GENERAL AND EYE HOSPITAL.—House Surgeon. Salary £125 per annum, with board, washing, and attendance. Also House Physician. Salary £125 per annum, with board, apartments, and laundry.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with rooms, board, and washing.

WALSALL AND DISTRICT HOSPITAL.—Junior House Surgeon and Anæsthetist. Salary £110 per annum, with board, residence, and laundry.

WANDSWORTH UNION INFIRMARY, Ouseley-road, Balham, S.W.—Second Assistant Medical Officer, unmarried. Salary at rate of £150 per annum, with board, lodging, and washing.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant Resident House Surgeon and Anæsthetist, unmarried. Salary £100 per annum, with board, residence, and washing.

WEST RIDING COUNTY COUNCIL.—School Medical Inspector. Salary £325 per annum.

WEST RIDING OF THE COUNTY OF YORK, STORTHES HALL ASYLUM, Kirkburton, near Huddersfield.—Assistant Medical Officer. Salary £230 per annum, with rooms, board, attendance, and washing.

WESTON-SUPER-MARE HOSPITAL.—House Surgeon, unmarried. Salary £120 per annum, with residence, board, and laundry.

WILLESDEN URBAN DISTRICT COUNCIL ISOLATION HOSPITAL, Neasden.—Assistant Medical Superintendent, unmarried. Salary £200 per annum, with board, lodging, and washing.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—House Physician. Salary £80 per annum.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Gargrave, in the county of York.

Births, Marriages, and Deaths.

BIRTHS.

BENSUSAN-BUTT.—On July 24th, to Dr. Ruth and G. C. Bensusan-Butt, of North Hill, Colchester—twins (boy and girl).

STANSFELD.—On July 24th, at Bryanston-street, Portman-square, W., to Dr. and Mrs. A. E. Stansfeld, a daughter.

MARRIAGES.

CROSSLEY—SKINNER.—On July 29th, at Wavendon, Leonard Crossley, M.D., of Winsley, Wilts, to Innes Muriel Skinner, of Wavendon, Bucks.

WARNER—TAYLER.—On July 25th, at Southwark Cathedral, Harold Percy Warner, M.B., B.S., to Kathleen Rose, eldest daughter of J. P. Tayler, of Old Charlton, Kent.

DEATHS.

SPETTIGUE.—On July 27th, at Doreen, Wellington, Somerset, Harriett, wife of William Spettigue, M.B. Edin.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

TERCENTENARY OF LOGARITHMS AND JOHN NAPIER.

THE tercentenary of the invention of logarithms by John Napier, the laird of Merchiston, has just been celebrated at Edinburgh. Merchiston Castle, where he was born in 1550, is practically a part of Edinburgh and an historical building. In 1614 he published at Edinburgh his famous "Mirifici Logarithmorum Canonis Descriptio," or marvellous abbreviated computation by natural or hyperbolic logarithms. Although these logarithms have been of great service in the higher mathematics, the kind now chiefly used in common computation were proposed by Henry Briggs, a contemporary and reader in geometry in Gresham College, London, and afterwards Savilian professor at Oxford, who founded his tables upon Napier's, but chose a different base to his system. It is said that Briggs was so surprised at the invention that he could not rest till he saw the inventor, and that, when they did meet, a quarter of an hour was spent, each beholding the other with admiration, before one word was spoken. The invention, as said Laplace, the famous French astronomer, "reduces to a few days the labour of several months, doubles the life of astronomers, and is worthy of praise." There are many men who use the typewriter or other appliances who are ignorant of their mechanical construction, but can appreciate their practical utility and in the same way many men have used logarithms without understanding anything of the properties of hyperbolas or fractional exponents or irrational numbers, investigations which although attractive to some persons are repellent to others. The medical profession will add its tribute with other scientific and technical professions to the value of a wonderful paper calculating machine. The engineer has found it especially useful, but he has now invented, and perhaps perfected, mechanical calculating machines which in some instances supersede the use of the paper machine. These modern machines are far superior to the machine which is attributed to Napier—viz., Napier's rods or bones, the art of computing by which has been dignified under the name of Rhabdology, as these small squared pieces of bone, ivory, box, or silver, although interesting to the curious, make the process of calculation by topsyturvy and right to left methods too tedious to be of any real value.

"BY JIMINY."

To the Editor of THE LANCET.

SIR,—On p. 1295 of your number for May 2nd, 1914, you remark that the expletive "By Jiminy" has always been more current in books than in real life, so may I tell a little story?

On the night of Good Friday, 1894, I think, snow fell heavily in Maidstone and lay in deep drifts next day. Hard frost supervened. Easter morning was like Christmas, except for brilliant sunshine at 6.30 A.M. Two friends returning from early service were met at their door by a little boot and knife boy, stamping his feet, and blowing his blue fingers. He exclaimed, "Jiminy! ain't it cold?" His hearers were amused, but the remark did not seem out of the way or unusual. So, perhaps, it was then common in Kent.

I am, Sir, yours faithfully,

July 9th, 1914. A READER.

THE ISLAND OF ST. HELENA.

IT appears from the Blue-book for the year 1913 just received at the Colonial Office that the estimated population of St. Helena is now 3650. The birth-rate for the year was 28·7, as against 28·4 per 1000 in 1912. The death-rate increased from 12·5 per 1000 in 1912 to 14·5 in 1913. There were 6 deaths from tuberculosis, being a mortality-rate of 1·7 per 1000 living. The infant mortality-rate was 58·3 per 1000 births. The water-supply in many of the country districts is, and always has been, very unsatisfactory. The ailments of children are very commonly aggravated by the almost universal prevalence of intestinal worms, these parasites being due to defective water in the majority of instances. The mean temperature of the year was 62·4° F., and the total rainfall 43·63 inches. The number of rainy days totalled 273. A "clear sky" was recorded on May 31st—a very unusual observation. There were 139 admissions to the hospital during the year and 8 deaths. Miss Barnes completed her three years' engagement and was replaced by Miss Sherlock; both had been selected by the Colonial Nursing Association.

GARBAGE DISPOSAL.

ACCORDING to a report received at the British Foreign Office from Mr. H. E. Gresham, Vice-Consul at Cleveland, Ohio, the collection and disposal of garbage in that city are exceptionally well cared for, the disposal plant being said to be one of the best in the United States. In 1913 practically 3,000,000 pounds of grease and over 10,000,000 tons of tankage were obtained and sold for over $150,000. There are 250 tons of garbage collected in the city each day, from which are obtained 35 tons of dried tankage. The Cleveland method is called the reduction process, as contrasted to dumping into a body of water, burying underground, or burning. The system consists essentially of reduction by the application of heat to the garbage, producing a sterile tankage and recoverable products. The raw garbage is placed in closed steel tanks, having capacities from 1 to 10 tons each, and cooked by steam from four to eight hours. It is usual to keep about a 70-pound steam pressure on the cooking chambers, which is sufficient to render the product entirely sterile. After cooking, the liquors, consisting of condensed steam and grease, are drawn off. The grease is sold to large manufacturing concerns that have refineries. It brings about 2*d.* per pound, and has very natural and profitable uses. The larger part is used to make soap and candles, but some is a white, clear glycerine, which can be used for medicinal purposes. The tankage remaining after the liquors are drawn off is sold to fertiliser companies. In a ton of commercial fertiliser some 500 pounds of tankage may be used. To this are added potash, salt, and other ingredients to make the proper composition for plant food.

Dr. von Schneider.—Some notes with reference to soured milk which may afford the information desired will be found in "Notes on Soured Milk and Other Methods of Administering Selected Lactic Germs in Intestinal Bacterio-Therapy," by Elie Metchnikoff, of the Pasteur Institute, Paris. Published in 1909 at the price of 1s. by Messrs. John Bale, Sons, and Danielsson, Limited, 83–91, Great Tichfield-street, Oxford-street, London, W.

P. N., L.R.C.P.—Information will be found in THE LANCET of July 5th, 1913, p. 7. The title of the article was "The Kinetic Theory of Shock and its Prevention Through Anoci-Association (Shockless Operation)." By George W. Crile, M.D. A book on "Anoci-Association," by Dr. George W. Crile and Dr. William E. Lower, has just been published by Messrs. W. B. Saunders Company, 9, Henrietta-street, Covent Garden, London, W.C., at the price of 13s. net. (*Vide* announcement on p. 3 (advertisements) in THE LANCET of July 25th.)

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. Gibb: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Souttar: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. Gibb: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Souttar: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY to SATURDAY (each day).—Special Holiday Course.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

For further particulars of the above Lectures, &c., see Advertisement Pages.

A DIARY OF CONGRESSES.

THE following Congresses, Conferences, and Exhibitions are announced.

In 1914:—

July 27th-Aug. 2nd (Havre).—Congress of the French Association for the Advancement of Science.

July-September (Australia).—Eighty-fourth Annual Meeting of the British Association for the Advancement of Science. (July 28th to August 3rd at Perth, August 8th to 12th at Adelaide, August 13th to 19th at Melbourne, August 20th to 26th at Sydney, August 27th to Sept. 1st at Brisbane).

Aug. 2nd-10th (Paris).—Tenth Congress of Esperantists.

,, 3rd-8th (London).—Sixth International Dental Congress.

,, 10th-15th (St. Petersburg).—Twelfth International Congress of Ophthalmology.

,, 29th-Sept. 14th (Toronto).—Canadian National Exhibition.

Sept. 7th-12th (Berne).—International Congress for Neurology, Psychiatry, and Psychology.

,, 10th-12th (Fort William and Port Arthur, Ontario).—Fourth Annual Congress of the Canadian Public Health Association.

,, 21st-26th (Victoria, B.C.).—Dominion Exhibition.

,, 21st-26th (Vienna).—Third International Congress on Diseases of Occupation.

,, 30th-Oct. 4th (Brussels). Fourteenth French (de langue française) Congress of Medicine.

Oct. 31st-Nov. 2nd (Berlin).—First Congress of the International Society for Sexual Research.

Nov. 15th-21st (London).—Health Week. (Under the direction of the Health Week Committee appointed by the Royal Sanitary Institute.)

(St. Petersburg).—Third Mendeléeff Congress of Pure and Applied Chemistry and Physics.

In 1915:—

Feb. 20th (opens) (San Francisco).—Panama-Pacific International Exposition.

May 31st-June 5th (London, South Kensington).—Sixth International Congress of Social Work and Service.

Sept. 5th-8th (Hamburg).—Tenth International Congress of Otology.

,, 8th (begins) (Manchester).—Meeting of the British Association.

,, 9th-12th (Hamburg).—Fourth International Rhino-Laryngological Congress.

,, 13th-17th (New York).—Seventh International Congress for Obstetrics and Gynæcology.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1914, which was completed with the issue of June 27th, were given in THE LANCET of July 4th.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1914 are now ready. Bound in cloth, gilt lettered, price 16*s.* carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free from THE LANCET Offices, have been reduced, and are now as follows:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 1 0	One Year	£1 5 0
Six Months	0 12 6	Six Months	0 14 0
Three Months	0 6 6	Three Months	0 7 0

(The rate for the United Kingdom will apply also to Medical Subordinates in India whose rates of pay, including allowances, is less than Rs.50 per month.)

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—MESSRS. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 29th, 1914.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
July 23	29·72	N.W.	0·07	112	66	54	55	59	Cloudy
,, 24	29·68	W.	...	109	66	58	57	61	Cloudy
,, 25	29·62	W.	...	124	66	56	56	60	Cloudy
,, 26	29·60	W.	0·05	111	62	52	54	57	Cloudy
,, 27	29·56	W.	...	115	65	52	52	54	Cloudy
,, 28	29·70	N.	...	109	68	54	56	60	Fine
,, 29	29·88	N.W.	...	92	63	56	56	60	Cloudy

The following magazines, journals, &c., have been received:—Interstate Medical Journal, Monthly Cyclopedia and Medical Bulletin, Archives of Internal Medicine, South African Medica Record, School Hygiene, Annals of Tropical Medicine and Parasitology, University of Toronto Medical Bulletin, Journal of Mental Science, Annali di Medicina Navale e Coloniale, Canadian Gazette, Indian Medical Gazette, Indian Journal of Medical Research, Therapeutic Gazette, Bulletins et Memoires de la Société Médicale des Hôpitaux de Paris, Dublin Journal of Medical Science, Office International d'Hygiéne Publique, Canadian Practitioner and Review, Journal d'Urologie, Annales de Medicine, Malaria e Malattre dei Paesi Caldi, Journal of Hygiene, &c.

Communications, Letters, &c., have been received from—

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